DOCUMENT RESUME

ED 359 943 IR 016 166

TITLE World Trends in Corporatization and Privatization. Proceedings of the 1993 Mid-Year Seminar of the Pacific Telecommunications Council (Taipei, Taiwan, June 9-11, 1993).
INSTITUTION Pacific Telecommunications Council, Honolulu, HI.
PUB DATE Jun 93
NOTE 250p.
PUB TYPE Collected Works - Conference Proceedings (021)

EDRS PRICE MF01/PC10 Plus Postage.
DESCRIPTORS Change; *Financial Support; Foreign Countries; Global Approach; *Government Role; *Investment; Policy Formation; Private Sector; *Privatization; Public Policy; Public Sector; Seminars; Surveys; Technological Advancement; *Telecommunications; Trend Analysis
IDENTIFIERS Australia; New Zealand; *Pacific Telecommunications Council; Taiwan; Technological Infrastructure; World Views

ABSTRACT

This packet of materials from the Mid-Year Seminar of the Pacific Telecommunications Council begins with lists of attendees and participants and the conference agenda. Papers include the following: (1) "Global Trends-Restructuring, Privatization, Finance, Investment: Worldwide Trends towards Liberalizing the Wireless Segment of Telecommunications" (Michael Chow); (2) "Global Trends-Restructuring, Privatization, Finance, Investment: Joint Ventures and Strategic Alliances" (eight figures and eight handouts only provided) (Christopher M. Harland); (3) "Panel Discussion: Overview of the Proposed Change" (Pao-Nang Wu); (4) "Global Trends-Restructuring, Privatization, Finance, Investment: Going All the Way--What It's Like To Be Un-Regulated" (Anthony N. Briscoe); (5) "Case Studies: Regulatory Environment for Telecommunications and Broadcasting in Australia and New Zealand" (handouts and figures) (Gerald Moriarty); (6) "Case Studies: The Effects of Government Policies on Telecom Industry Developments" (Nam-Jin Cho); (7) "Case Studies: An ASEAN Survey of Privatization and Corporatization" (John Ure); (8) "Special Task Group Meetings: Travel/Tourism" (George Darby); (9) "Taiwan's Changing Telecom Landscape: Overview of Current Regulation/Policy" (King-Teh Lee); (10) "Taiwan's Changing Telecom Landscape: Preview of Infrastructure" (Duei Tsai); (11) "Panel Discussion: Overview of the Proposed Change" (handouts and figures) (C. J. Lee); and (12) "Panel Discussion: Overview of the Proposed Change" (handouts and figures) (L. B. Lan). (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

· PACIFIC TELECOMMUNICATIONS COUNCIL ·

· 1993 MID · YEAR SEMINAR ·

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

ED359943

World Trends in Corporatization and Privatization

June 9-11, 1993
Taipei, Taiwan, ROC

Hosted by

Directorate General of Telecommunications (DGT), MOTC

IR016166

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
James Savage

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

World Trends in Corporatization and Privatization

WEDNESDAY, JUNE 9

1700-1800 **Opening Ceremonies**

Steven Chen, Director General
Directorate General of Telecommunications
Ministry of Transportation and Communications
Taiwan, Republic of China

Chen-Fang Ma, Vice Minister
Ministry of Transporation and Communications
Taiwan, Republic of China

Yasuo Koseki, Chairman of the Board
Pacific Telecommunictions Council and
Senior Managing Director, Kokusai Denshin Denwa Co., Ltd.
Japan

Peter Branson, President
Pacific Telecommunications Council and
Director of Service Provision, Hongkong Telecom
Hong Kong

Jane N. Hurd, Vice President, Education & Seminars,
Pacific Telecommunications Council and
Vice President, Government and International Marketing, Telephony International, Inc.
USA

P.Y. Lee
Chairman, AT&T Taiwan Telecom. Co., Ltd.
Taiwan, Republic of China

1800-2000 Opening Reception, hosted by Directorate General of Telecommunications, ROC

BEST COPY AVAILABLE

The 1993 PTC Mid-Year Seminar
Taipei, Taiwan - June 9-11, 1993
Final Attendee List

Richard J. Barber
Executive Director
Pacific Telecommunications Council
Honolulu, HI 96826 USA
Tel: 808-941-3789
Fax: 808-944-4874

Dr. George J. Boughton
Professor of History
University of Guam
UOG Station
Mangilao, GU 96923 USA
Tel: 671-734-9233
Fax: 671-734-7930

Mr. Peter Branson
Director of Service Provision
Hongkong Telecom
GPO Box 9896, 34/F Office Twr
Convention Plaza, 1 Harbour Rd
Wanchai Hong Kong
Tel: 852-888-2222
Fax: 852-824-2424

Mr. Anthony N. Briscoe
Director, International
Telecom New Zealand Int'l Ltd
PO Box 1092
Wellington New Zealand
Tel: 64-4-473-8444
Fax: 64-4-473-1044

Mr. Janusz Buczkowski
Technologica Pty Ltd
48 Hamilton St
Lane Cove, NSW 2066 Australia
Tel: 612-427-5014
Fax: 612-418-6614

Mr. Charles C.P. Chang
Vice President
Cable Pacific Telecommunications Services Co
5th floor, Pacific Commercial Building No.285
Chung Hsiao E. Road, Sec. 4
Taipei Taiwan, R.O.C
Tel: 886-2-751-3699
Fax: 886-2-751-3611

Mr. Kuang-Nan Chang
Deputy Director
Southern Taiwan Telecomms Administration
Business Department
230 Linsen 1st Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-344-2201
Fax: 886-7-273-5994

Mr. Lang-Chee Chang
Chief
Data Communication Institute
Technical Office
21 Hsinyi Rd, Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2501
Fax: 886-2-394-8404

Mr. Shaio Tung Chang
Chief
Data Communication Institute
Planning Office
21 Hsinyi Rd, Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2503
Fax: 886-2-344-2121

Mr. Chung-Chi Chao
Associate Engineer
Long Distance Telecomms Administration
Planning Department
52 Chinshan S. Rd, Sec.2
Taipei, Taiwan ROC
Tel: 886-2-344-2808
Fax: 886-2-394-0814

Ms. Winifred Chao
Director
Bell Atlantic Int'l, Inc.
1310 N. Court House Rd.
5th floor
Arlington, VA 22201 USA
Tel: 703-875-8830
Fax: 703-351-4527

Mr. Andrew Che
Product Controller
Hongkong Telecom
23/F, Office Tower, Convention Plaza
1 Harbor Road
Wanchai Hong Kong
Tel: 852-883-3353
Fax: 852-824-3530

Mr. A.W. Chen
Associate Administrator
Coprorate Planning Department
Directorate General of Telecomms
31 Ai Kuo E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3887
Fax: 886-2-397-2254

Mr. Cheng-Luh Chen
Deputy Managing Director
International Telecomms Administration
21 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3704
Fax: 886-2-312-2235

Mr. Chieh-Chih Chen
Division Chief
Directorate General of Telecomms
Plant Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3682
Fax: 886-2-707-2106

Mr. Chin-Lung Chen
Senior Engineer
Directorate General of Telecomms
Technology Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-2010
Fax: 886-2-351-9514

Ms. Evelyn Chen
Assoc Administrator, Personnel
Directorate Gen of Telecoms
31 Ai-Kuo E Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3667
Fax: 886-2-395-2763

Mr. Fu-Hsiung Chen
Senior Engineer
Directorate Gen of Telecoms
Research & Planning Cmte Secrtrt
31 Ai-Kuo E Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3622
Fax: 886-2-321-8953

Mr. Hsiu-Chung Chen
Administrator, Corp Plan Dept
Directorate Gen of Telecoms
31 Ai-Kuo E Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3964
Fax: 886-2-397-2254

Mr. Jui-Hsiung Chen
Deputy Managing Director
Int'l Telecoms Administration
31 Ai-Kuo E Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3702
Fax: 886-2-392-9464

Mr. Kinbo B. Chen
Managing Director
International Telecomms Administration
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3700
Fax: 886-2-392-9464

Mr. Kuang-Yi Chen
Director
Telecommunications Laboratories
Outside Plant Technology Laboratory
PO Box 71
Chungli, Taiwan ROC
Tel: 886-3-424-4451
Fax: 886-3-490-4004

Mr. Kwo-Sen Chen
Engineer
Northern Taiwan Telecomms Administration
Panchiao Office
Taipei, Taiwan ROC
Tel: 886-2-963-9300
Fax: 886-2-963-9453

Mr. Michael Chen
Institute for Information Industry
11F 106 Sec.2 Ho Ping E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-377-6100
Fax: 886-2-378-1339

Mr. P.C. Chen
Deputy Director General
Directorate General of Telecomms
31 Ai-Kuo E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3603
Fax: 886-2-394-7324

Mr. Shyh-Yung Chen
Deputy Director
Central Taiwan Telecomms Administration
Business Department
37 Shihfu Rd
Taichung, Taiwan ROC
Tel: 886-2-288-2322
Fax: 886-2-227-4689

Mr. Steven Y. Chen
Director General
Directorate General of Telecomms
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3601
Fax: 886-2-394-7324

Mr. Tien-Kuei Chen
Deputy Manager
Northern Taiwan Telecomms Administration
Keelung Office
299 Jen-I Rd
Keelung, Taiwan ROC
Tel: 886-2-424-4310
Fax:

Mr. W.H. Chen
Director
International Telecomms Administration
General Planning Department
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3897
Fax: 886-2-322-4079

Mr. Y.K. Chen
Chairman
Telsis Technology Ltd
29-3 Sec.1 Jen Ai Rd
Taipei, Taiwan ROC
Tel: 886-2-351-5266
Fax: 886-2-351-5266

Mr. Yow-Jyi Chen
Director
Telecommunications Laboratories
Model Shop
PO Box 71
Chungli, Taiwan ROC
Tel: 886-3-424-4540
Fax: 886-3-490-4004

Mr. Ku-Ching Cheng
Director
Northern Taiwan Telecomms Administration
Engineering Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3026
Fax: 886-641-6119

Ms. Lily Cheng
Associate Administrator
Northern Taiwan Telecomms Administration
Accounting Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3232
Fax: 886-2-321-7478

Ms. Sophia Cheng
Section Chief
Directorate General of Telecomms
Business Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-5688
Fax: 886-2-393-4957

Mr. Tsun-I Cheng
Director
Northern Taiwan Telecomms Administration
Planning Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3260
Fax: 886-2-392-0982

Mr. William Cheng
Manager
Fujitsu Limited Taipei
Sunglow Bldg 8F
66 Sung Chiang Rd
Taipei, Taiwan ROC
Tel: 886-2-561-7715
Fax: 886-2-539-7454

Mr. Feng Chian
President
Vanguard Info Center Inc
4F 7 Lane 50 Sec 3
Nan Kang Rd
Taipei, Taiwan ROC
Tel: 886-2-785-8900
Fax: 886-2-785-2055

Mr. Rong-Chi Chiang
Chief
Northern Taiwan Telecomms Administration
2nd Construction Corps
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3423
Fax: 886-2-391-7524

Mr. S.S. Chiang
Associate Director
Taiwan Int'l Standard Electronics Ltd
4 Ming Shen St
Tu Chen Industrial District
Taipei, Taiwan ROC
Tel: 886-2-268-6702
Fax: 886-2-268-6001

Mr. Vincent Chih
Manager
AT&T Taiwan Inc.
Operations Systems Business Development
12F Overseas Trust Bldg
249 Sec. 1 Tun Hwa S. Rd
Taipei, Taiwan ROC
Tel: 886-2-775-6353
Fax: 886-2-775-6356

Mr. Nam-Jin Cho
Managing Director Overseas Cooperation Dept.
Korea Telecom
Sejongno Chongno-gu
Seoul 110-777 Republic of Korea
Tel: 82-2-750-3810
Fax: 82-2-750-3830

Ms. Maria Chou
Technical Manager
AT&T Taiwan Inc.
Operations Systems Business Development
249 Sec.1 Tun Hwa S. Rd.
Taipei, Taiwan ROC
Tel: 886-2-775-6398
Fax: 886-2-775-6356

Mr. Shen-Cheng Chou
Division Chief
Southern Taiwan Telecomms Administration
Plant Department
230 Linsen 1st Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-344-5202

Mr. Yun-Lan Chou
Executive Director
Taiwan Telecomm Engineering Industry Associat
8F-3 115 Sec.1 Hong Chou S. Rd
Taipei, Taiwan ROC
Tel: 886-2-397-2828 x779
Fax: 886-2-393-3685

Mr. C.Y. Chow
Director
International Telecomms Administration
Traffic & Commercial Department
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3766
Fax: 886-2-322-5104

Mr. Michael Chow
Vice President Asia Region
BellSouth International (Asia/Pacific) Inc.
80 Gloucester Rd 22/F
Wanchai, Hong Kong
Tel: 852-528-4567
Fax: 852-865-6757

Mr. Ming-Shiang Chung
Division Chief
Long Distance Telecomms Administration
Switching Department
52 Chinshan S. Rd. Sec.2
Taipei, Taiwan ROC
Tel: 886-2-344-3121
Fax: 886-2-394-5024

Mr. John Craven
Partner
Andersen Consulting
19th Flr 360 Elizabeth St
Melbourne Vic 3000 Australia
Tel: 61-3-286-7000
Fax: 61-3-286-7100

Mr. Gregg Daffner
VP Market Dev. & Regulatory Affairs
PanAmSat
One Pickwick Plaza
Greenwich CT 06830 USA
Tel: 203-622-6664
Fax: 203-622-9163

Mr. George Darby
Attorney at Law
Law Offices of George E. Darby
Box 61450
Honolulu, HI 96839-1450 USA
Tel: 808-955-1445
Fax: 808-955-2936

Mr. Stephen Doyle
Regional Manager Operations Asia/Pacific
Cable & Wireless (Pacific)
22nd Floor Office Tower
Convention Plaza
1 Harbour Rd
Hong Kong
Tel: 852-888-8723
Fax: 852-868-5200

Mr. David Ecret
Public Affairs and Communications Manager
Guam Telephone Authority
P.O. Box 9008
Tamuning, Guam 96031 USA
Tel: 671-649-2147
Fax: 671-649-4821

Mr. Ju-Ching Fuh
Chief 3rd Construction Corps
Northern Taiwan Telecoms Administ
83 Shinnyih Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-950-9981
Fax: 886-2-956-2204

Mr. Bill Gribble
Regional Sales Manager
Telecom Sources ASM Group
6/F PaoFu Ctr
128 Ming Sheng E. Rd. Sec. 3
Taipei, Taiwan ROC
Tel: 886-2-712-6877
Fax: 886-2-719-1688

Mr. John Ward Hardyment
President
The Bayshore Pacific Group
11/F No. 285 Chung Hsiao E. Rd.
Sec. 4
Taipei, Taiwan ROC
Tel: 886-2-731-0898
Fax: 886-2-781-2289

Mr. Christoper M. Harland
Executive Director Group Head Telecoms
Morgan Stanley Inc.
1251 Avenue of the Americas
New York NY 10020 USA
Tel: 202-703-8320
Fax: 202-703-6476

Mr. Eiji Hayashi
Gen Mgr Engineering Coordination Div
NEC Corporation
7-1 Shiba 5-Chome
Minato-ku Tokyo 108-01 Japan
Tel: 81-3-3798-6593
Fax: 81-3-3798-6598

Mr. Misa Hirono
Senior Staff
KDD
3-2 Nishi-shinjuku 2-chome
Shinjuku-ku, Tokyo 163 Japan
Tel: 81-3-3347-6479
Fax: 81-3-3347-6470

Mr. Joseph J. Hobbs
Manager - Training & Education
Bell Communications Research
6200 Route 53 - CP 101B
Lisle, IL 60532 USA
Tel: 708-960-6664
Fax: 708-960-6360

Mr. Peter Hong
President
Asiacom Corp.
10F2 128 Sec. 3 Ming Sheng E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-718-5511
Fax: 886-2-718-1717

Mr. Peter Houston
Editor in Chief
Telecom Sources, ASM Group
GPO Box 11411
Hong Kong
Tel: 852-555-5029
Fax: 852-870-0940

Mr. Yu-Min Hsiao
Manager
Kuan Yue Electric Co Ltd
9F, 162, Sec.2, Chang An E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-776-3200
Fax: 886-2-721-1347

Mr. Arthur Hsieh
Attorney At Law
Evergreen International Law Office
Ste 802 8F 79 Roosevelt Rd Sec 2
Taipei, Taiwan ROC
Tel: 886-2-369-1166
Fax: 886-2-369-2222

Mr. Chou-Kuang Hsieh
Engineer
Northern Taiwan Telecomms Administration
Outside Plant Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3136
Fax: 886-2-396-3344

Mr. Pao-Jen Hsu
Assistant Administrator
Directorate General of Telecomms
Regulatory Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3295
Fax: 886-2-396-2095

Mr. Shu-Mei Hsu
Associate Administrator
Telecommunication Training Institute
Training Development Office
168 Minchu Rd, Panchiao
Taipei, Taiwan ROC
Tel: 886-2-963-9293
Fax: 886-2-963-9453

Mr. John C.C. Hsueh
Deputy Managing Director
Data Communication Institute
21 Hsinyi Rd Sec 1
Taipei, Taiwan ROC
Tel: 886-2-344-3011
Fax: 886-2-344-2606

Mr. Chu-Chuen Hu
Chief
Telecommunication Training Institute
Business & Traffic Department
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9540
Fax: 886-2-963-9453

Mr. Ho-Ming Huang
Managing Director
Hewlett Packard Taiwan Ltd
8F, 337 Fu-Hsing N Rd
Taipei, Taiwan ROC
Tel: 886-2-717-9588
Fax: 886-2-715-0851

Mr. Jeen-Cheng Huang
Deputy Chief Engineer
Northern Taiwan Telecoms Administ
42 Jenai Rd, Sec 1
Taipei, Taiwan ROC
Tel: 886-2-344-2005
Fax: 886-3-391-6904

Ms. Susan S. Huang
Associate, Investment Banking Division
Morgan Stanley Asia Ltd.
30th Fl. Three Exchange Square
Hong Kong
Tel: 852-848-5664
Fax: 852-868-5321

Mr. Y.N. Huang
Deputy Director General
Directorate General of Telecomms
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3604
Fax: 886-2-394-7324

Mr. R.S. Hung
Director
Directorate General of Telecomms
General Affairs Department
31 Ai-Kuo E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3487
Fax: 886-2-356-8306

Ms. Jane N. Hurd
Vice President Gov't & Int'l Marketing
Telephony International Inc.
1120 C St SE
Washington, DC 20003-1402 USA
Tel: 202-675-4585
Fax: 202-675-4586

Mr. Cheng-Min Hwang
Deputy Director
Central Taiwan Telecomms Administration
Engineering Department
37 Shihfu Rd
Taichung, Taiwan ROC
Tel: 886-4-288-2401
Fax: 886-4-227-4689

Mr. Hang-Tung Hwang
Director Acctg Dept
Central Taiwan Telecoms Administ
37 Shihfu Rd
Taichung, Taiwan ROC
Tel: 886-4-288-2305
Fax: 886-4-227-4689

Mr. Lang-Yueh Hwang
Division Chief
Northern Taiwan Telecomms Administration
Engineering Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3637
Fax: 886-2-344-2246

Mr. Ming-Ju Hwang
Senior Engineer
Directorate General of Telecomms
Regulatory Department
31 Ai-Kuo E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3312
Fax: 886-2-396-2095

Mr. Tern-Han Hwang
Chief
Data Communication Institute
Personnel Office
21 Hsinyi Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2516
Fax: 886-2-394-8404

Mr. Reinhard Ilgner
Director
GTE
245 Perimeter Center Parkway
Atlanta, CA 30346 USA
Tel: 404-391-1713
Fax: 404-391-8568

Mr. Teh-Feng Jen
Associate Administrator
Directorate General of Telecomms
Personnel Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3667
Fax: 886-2-395-2763

Mr. Bor-Chenn Jeng
Director
Telecommunications Laboratories
Basic & Applied Research Laboratory
PO Box 71
Chungli, Taiwan ROC
Tel: 886-3-424-4373
Fax: 886-2-396-6141

Mr. Andrew Jordan
Marketing Manager
Asia Satellite Telecoms Company Limited
23-24/F East Exchange Tower
38-40 Leighton Road
Hong Kong
Tel: 852-805-6650
Fax: 852-576-4111

Mr. Toru Kamahara
Executive Vice President
Japan Telecoms Eng & Consulting Service
2-29-5 Nishi-Gotanda, Shinagawa-ku
Tokyo 141 Japan
Tel: 81-3-3495-5211
Fax: 81-3-3495-5219

Mr. Nien-Keng Kao
Director
Central Taiwan Telecomms Administration
Planning Department
37 Shihfu Rd
Taichung, Taiwan ROC
Tel: 886-4-288-2541
Fax: 886-4-227-4689

Mr. Hideo Kato
Assoc Gen Man Int'l Telecom Bus Group
Fujitsu Ltd.
3-12 Higashi Shinagawa
2-chome, Shinagawa-ku
Tokyo 104 Japan
Tel: 81-3-5460-7154
Fax: 81-3-5460-7366

Mr. Alan Khoo
Vice President - Asia
US West International Inc.
Suite 1608 Exchange Square Tower Two
8 Connaught Place
Central, Hong Kong
Tel: 852-845-4133
Fax: 852-845-1269

Mr. S.T. King
Managing Director
United Fiber Optic Communication Inc
5F-5 18 Chinshan S. Rd Sec.2
Taipei, Taiwan ROC
Tel: 886-2-396-5222
Fax: 886-2-396-5221

Mr. Ivor Nolan Knight
Vice President, Business Tech. & Stan.
COMSAT World Systems
6560 Rock Spring Drive
Bethesda, Maryland 20817 USA
Tel: 301-214-3555
Fax: 301-214-7100

Mr. Chin-Chen Ko
Senior Engineer
Directorate General of Telecomms
Plant Department
31 Ai-Kuo E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3682
Fax: 886-2-707-2106

Mr. Eui K. Koh
Regional Director for Asia/Pacific
INTELSAT
3400 International Drive NW
Washington, DC 20008-3098 USA
Tel: 202-944-7236
Fax: 202-944-7925

Mr. Yasuo Koseki
Senior Managing Director
Kokusai Denshin Denwa Co. Ltd.
3-2 Nishi-shijuku 2-Chome
Shinjuku-ku, Tokyo 163 Japan
Tel: 81-3-3347-7531
Fax: 81-3-3347-7548

Mr. Yasukuni Kotaka
Vice President
NEC Corporation
7-1, Shiba 5-Chome
Minato-ku, Tokyo 108-01 Japan
Tel: 81-3-3798-6506
Fax: 81-3-3798-6598

Mr. Ante Ku
Research Fellow & Ph.D. Student
CIRCIT and Monash University Australia
4 Riverside Quay
South Melbourne Victoria 3205 Australia
Tel: 613-616-8848

Mr. Victor C. Ku
Managing Director
Siemens Telecom Systems Ltd
6 Weng Ming 1st St
Kuei Shan Shiang
Taoyuan Hsien, Taiwan ROC
Tel: 886-3-328-8588
Fax: 886-3-328-8688

Mr. Ronald J. Kulczynski
Director Correspondent Relations
AT&T Hong Kong Ltd
24/F Three Exchange Square
8 Connaught Place
Central, Hong Kong
Tel: 852-846-2731
Fax: 852-845-0221

Mr. Hsien-Wu Lai
Special Assistant to President
TECOM Co. Ltd.
23 R&D Road
2 Hsin-Chu, Taiwan ROC
Tel: 886-35-775-141
Fax: 886-35-776-855

Mr. W.S. Lai
President
Cosmopolitan Electric Industrial Co.
7F 174 Sec.2 Ming Sheng E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-501-2345
Fax: 886-2-503-4045

Mr. Yih-Maw Lai
Engineer
Northern Taiwan Telecomms Administration
Equipment Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3215
Fax: 886-2-321-4599

Mr. L.B. Lan
Directorate General of Telecomms
Business Department
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3637
Fax: 886-2-393-4957

Mr. Wilson Lazzar
Regional Program Manager
Motorola
1501 W. Shure Drive
Arlington Heights, IL 60004 USA
Tel: 708-632-5497
Fax: 708-632-7333

Mr. Raynald Leconte
Representative
France Telecom
World Trade Center 8th floor
Jl. Jend. Sudirman Kav. 29-31
Jakarta 12920 Indonesia
Tel: 62-21-521-1850
Fax: 62-21-521-1851

Mr. C.J. Lee
Deputy Managing Director
Northern Taiwan Telecomms Administration
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2003
Fax: 886-2-341-2564

Mr. Cheng-Yung Lee
Associate Administrator
Directorate General of Telecomms
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3636
Fax: 886-2-393-4957

Mr. Chung-Fun Lee
Deputy Managing Director
Telecommunication Training Institute
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9262
Fax: 886-2-963-9453

Mr. Hyo-Duck Lee
Manager Overseas Cooperation Dept.
Korea Telecom
100 Sejong-no Chongno-Gu
Seoul 110-777 Republic of Korea
Tel: 82-2-750-3818
Fax: 82-2-750-3830

Mr. Jin-Der Lee
Deputy Executive Secretary
Directorate General of Telecomms
Research & Planning Committee
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3622
Fax: 886-2-321-8953

Mr. P.Y. Lee
Chairman
AT&T Taiwan Telecomms
6F Overseas Trust Bldg
477 Tun Hwa S. Rd
Taipei, Taiwan ROC
Tel: 886-2-741-0051
Fax: 886-2-751-5714

Mr. Stone Lee
Director
AT&T - IOD
12F 249 Sec. 1
Tun Hwa South Rd
Taipei, Taiwan ROC
Tel: 886-2-775-6333
Fax: 886-2-775-6389

Ms. Yung-An Lee
Director
Northern Taiwan Telecomms Administration
Traffic Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3100
Fax: 886-2-394-5004

Mr. Lung-Sing Liang
Director
Telecommunications Laboratories
Switching Technology Laboratory
PO Box 71
Chungli, Taiwan ROC
Tel: 886-3-424-4392
Fax: 886-3-490-4004

Mr. T.I. Liao
Soung Pu Technical Engineering Co.
230 Kwang Hsing Rd
Tai Ping Hsiang
Taichung Hsien, Taiwan ROC
Tel: 886-4-278-6895

Mr. C.L. Lin
Director
International Telecomms Administration
Plant Department
31 Aiku E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3710
Fax: 886-2-392-0454

Mr. Chin-Rei Lin
Associate Engineer
Long Distance Telecomms Administration
Engineering Department
52 Chinshan S. Rd Sec.2
Taipei, Taiwan ROC
Tel: 886-2-344-3035
Fax: 886-2-351-0944

Mr. Ching-Chich Lin
Chief
Telecommunication Training Institute
Computer Science Department
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9370
Fax: 886-2-963-9453

Mr. Chuen-Yang Lin
Chief
Telecommunication Training Institute
Management Science Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-963-9420
Fax: 886-2-963-9453

Mr. Hsi-Ho Lin
Director Plant Dept
Central Taiwan Telecoms Administ
37 Shihfu Rd.
Taichung, Taiwan ROC
Tel: 886-4-288-2445
Fax: 886-4-227-4689

Mr. Jeng-Nan Lin
Division Chief, Traffic Dept
Directorate General of Telecoms
31 Ai-Kuo E Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3696
Fax: 886-2-322-4026

Mr. Kuang-Hsiung Lin
Chief
Telecommunication Training Institute
Personnel Office
168 Minchu Rd.
Panchiao, Taipei Taiwan ROC
Tel: 886-2-963-9530
Fax: 886-2-963-9453

Mr. Mao-Fang Lin
Deputy Director
Central Taiwan Telecomms Administration
Traffic Department
37 Shihfu Rd
Taichung, Taiwan ROC
Tel: 886-4-288-2269
Fax: 886-4-227-4689

Mr. Myng-Siung Lin
Far East Engineering consultant
5F 411 Jiann Gwo 1 Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-224-9166

Mr. Shyh-Chour Lin
Associate Administrator
Northern Taiwan Telecomms Administration
Personnel Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2521
Fax: 886-2-395-1429

Mr. Sun-Chi Lin
Director
Telecommunications Laboratories
Technical Service Department
PO Box 71
Chungli, Taiwan ROC
Tel: 886-3-424-4220
Fax: 886-3-490-4004

Mr. Y.S. Lin
Manager Marketing
AT&T Taiwan Telecommunications
6F Overseas Trust Bldg
249 Sec.1 Tun Hwa S. Rd
Taipei, Taiwan ROC
Tel: 886-2-776-7261
Fax: 886-2-751-5714

Mr. Ying-Chou Lin
Deputy Managing Director
Southern Taiwan Telecomms Administration
230 Linsen 1st Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-344-2000
Fax: 886-7-273-5994

Mr. Young Lin
Marketing Manager
Ericsson Taiwan Ltd
14F-B 18 Sec.4 Nan King E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-773-0030
Fax: 886-2-773-7223

Mr Chao-Shiuan Liu
Minister
Ministyr of Transportaion & Comms
2 Chang Sha St Sec.1
Taipei, Taiwan ROC
Tel: 886-2-349-2000
Fax: 886-2-389-6009

Mr. Chien-Tung Liu
Section Chief
Long Distance Telecomms Administration
Transmission Department
52 Chinshan s. Rd Sec.2
Taipei, Taiwan ROC
Tel: 886-2-344-3065
Fax: 886-2-397-2715

Mr. Keh-Yeong Liu
Deputy Director
Southern Taiwan Telecomms Administration
Personnel Department
230 Linsen 1st Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-344-3101
Fax: 886-7-273-5994

Mr. Michael Liu
Deputy Chief
Northern Taiwan Telecomms Administration
1st Construction Corps
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3391

Mr. Shyi-Sen Liu
Engineer
Northern Taiwan Telecomms Administration
Equipment Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-3215
Fax: 886-2-321-4599

Mr. Yih-Kuang Liu
Division Chief
Northern Taiwan Telecomms Administration
Equipment Department
42 Jenai Rd, Sec.1
Taipei, Taiwan ROC
Tel: 886-2-541-2346

Mr. N. Mark Lopianowski
Director
Teleconsult Ltd
402 W. Pender St. Ste 700
Vancouver, BC V6B 1T6 Canada
Tel: 604-684-1144
Fax: 604-687-7289

Mr. Ching-Sung Lu
Director
Telecomms Laboratories
Information Technology Laboratory
PO Box 71
Chungli, Taiwan ROC
Tel: 886-3-424-4377
Fax: 886-3-490-4004

Mr. Ping-Jsai Lu
Deputy Managing Director
Telecommunication Training Institute
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9261
Fax: 886-2-963-9453

Mr. Robert Lu
Divison Manager
Aurora Corporation
Business Equipments Business Group
15F 2 Sec.5 Hsin-Yih Rd.
Taipei, Taiwan ROC
Tel: 886-2-728-6120
Fax: 886-2-728-6187

Mr. S.C. Lu
Director
Ministry of Transportation & Communications
Department of Post & Telecom
2 Chang Sha St Sec.1
Taipei, Taiwan ROC
Tel: 882-2-349-2200
Fax: 886-2-381-4684

Mr. Shi-Ming Lu
Senior Engineer
Directorate General of Telecomms
Traffic Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3696
Fax: 886-2-322-4026

Mr. Horng-Hsiuan Luo
Division Chief Business Dept
Northern Taiwan Telecoms Admnst
42 Jenai Rd Sec 1
Taipei, Taiwan ROC
Tel: 886-2-344-2233
Fax: 886-2-393-9554

Mr. Yuan-Hsiung Lye
Managing Director
Telecommunication Training Institute
Taichung Center
658 Sec.2 Li-Ming Rd
Taichung, Taiwan ROC
Tel: 886-4-288-6500
Fax: 886-4-288-3520

Mr. Chen-Fang Ma
Vice Minister
Ministry of Transportaion & Comms
2 Chang Sha St Sec.1
Taipei, Taiwan ROC
Tel: 886-2-349-2010
Fax: 886-2-381-4684

Mr. Pao-Lien Ma
President
Shung Tong Electric Co Ltd
2F 37 Ching Tao E. Rd
Taipei
Taiwan ROC
Tel: 886-2-356-0011
Fax: 886-2-351-3377

Mr. John L. MacDuffie
Managing Director
AT&T Hong Kong Ltd
24/F Three Exchange Square
8 Connaught Place
Central, Hong Kong
Tel: 852-846-2793
Fax: 852-845-0221

Mr. Christopher William Maloy
Regional Director
Telstra
Suite 2614
Level 26 International Trade Building
333 Keelung Road Section 1
Taipei, Taiwan ROC
Tel: 886-2-220-2825
Fax: 886-2-220-2816

Mr. T.K. Mao
Vice Minister
Ministry of Transportation & Communications
2Chang Sha St Sec.1
Taipei, Taiwan ROC
Tel: 882-2-349-2020
Fax: 886-2-381-4684

Mr. Tedson Meyers
Attorney at Law Partner
Reid & Priest
701 Pennsylvania Ave NW
Ste 800
Washington, DC 20004-2608 USA
Tel: 202-508-4005
Fax: 202-508-4015

Mr. Shigeo Miyoshi
Senior Manager Planning and Research, IAD
Nippon Telegraph and Telephone Corp. (NTT)
1-1-6 Uchisaiwai-cho Chiyoda-ku
Tokyo 100-19 Japan
Tel: 81-3-3509-3253
Fax: 81-3-3509-8188

Mr. Raj Kumar Munusamy
Features Editor
IT Asia (Press)
Suite 16.04 16th floor
Plaza Atrium, LRG. P. RAMLEE.
Kuala Lumpur 50250 Malaysia
Tel: 603-238-8218
Fax: 603-238-8163

Ms. Sharon Nakama
Programs Manager
Pacific Telecommunications Council
2454 S. Beretania St. Ste 302
Honolulu, HI 96826 USA
Tel: 808-941-3789
Fax: 808-944-4874

Mr. Dennis S. Niimi
Managing Director - Int'l Services
GTE Hawaiian Tel
PO Box 2200
Honolulu, HI 96841 USA
Tel: 808-546-3075
Fax: 808-546-6416

Mr. Jerry Nowicki
Vice President
ESI Systems
4157 Quail Run Drive
Danville, CA 94506 USA
Tel: 510-736-6824
Fax: 510-736-9386

Mr. Scott Olin
Director - Project Dev & Implementation
BellSouth International (Asia/Pacific) Inc.
22/F, 80 Gloucester Rd.
Wanchai Hong Kong
Tel: 852-528-4567
Fax: 852-865-6757

Mr. Wen-Chung Pang
Director
Central Taiwan Telecomms Administration
Personnel Department
37 Shihfu Rd
Taichung, Taiwan ROC
Tel: 886-4-288-2365
Fax: 886-4-227-4689

Mr. Fu-Hsiung Peng
Deputy Dir Gen Affairs
Directorate Gen of Telecoms
31 Ai-Kuo E Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3552
Fax: 886-2-321-8953

Mr. Perry Peng
Telecom Division Manager
Raychem Taiwan Ltd.
4F 542-4 Chung Cheng Rd
Hsintien 231
Taipei, Taiwan ROC
Tel: 886-2-218-9155
Fax: 886-2-218-1134

Mr. Shin H. Peng
Division Manager
Raychem Taiwan Limited
4F #542-4 Chung Cheng Rd.
Hsin Tien City
Taiwan, Taipei ROC

Mr. Yun-Huei Peng
Engineer
Northern Taiwan Telecomms Administration
Outside Plant Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2195
Fax: 886-2-396-3344

Mr. Ying Price
Chief
American Institute in Taiwan
Commercial Section
32F 333 Keelung Rd Sec.1 Int'l Trade Tower
Taipei, Taiwan ROC
Tel: 886-2-720-1550
Fax: 886-2-757-7162

Mr. John Quigley
Special Advisor
Dept. of Communications Canada
c/o 300 Slater St
Rm 2030 JTN.
Ottawa, Ontario K1A 0C8 Canada
Tel: 613-998-3166
Fax: 613-952-1203

Mr. Michael Reynolds
Exec. Dir. - Mrkting & Bus Devel
BellSouth International (Asia-Pacific) Inc.
22/F 80 Gloucester Rd
Wanchai, Hong Kong
Tel: 852-528-4567
Fax: 852-865-6757

Mr. Dale T. Rogers
Marketing Manager Int'l Business
AT&T Network Systems
2300 Camino Ramon
Ste 200
San Ramon, CA 94583-1354 USA
Tel: 510-815-8246
Fax: 510-815-8163

Mr. Karl K. Rossiter
Business Development Manager
Television New Zealand
P.O. Box 3819
Auckland New Zealand
Tel: 64-6-753-9335
Fax: 64-6-753-2999

Mr. Karl Erik Rye
General Manager
Palau National Communications Corporation
P.O. Box 99
Palau, PW 96940 Palau
Tel: 680-488-2606
Fax: 680-488-1888

Ms. Sabrina Cubbon
Regional Manager
Asia Satellite Telecom Company Limited
23/24F East Exchange Tower
38-50 Leighton Rd
Hong Kong
Tel: 852-805-6650
Fax: 852-576-4111

Mr. James Savage
Assistant Director
Pacific Telecommunications Council
2454 S. Beretania St. Ste 302
Honolulu, HI 96826 USA
Tel: 808-941-3789
Fax: 808-944-4874

Mr. Mitchell Schoenberg
Director
American Express Bank Ltd.
5F 214 Tun Hwa N. Rd.
Taipei, Taiwan ROC
Tel: 886-2-714-9448
Fax: 886-2-714-9488

Mr. Roger D. Severance
Managing Director
Severance International Inc.
1120 C St. SE
Washington, DC 20003-1402
USA
Tel: 202-675-4585
Fax: 202-675-4586

Mr. Mohammad Shabib
Country Manager
Motorola
Tamara Centre Suite 702
Jl. Jend. Sudirman kav.24
Jakarta 12920 Indonesia
Tel: 62-21-5206348
Fax: 62-21-5203677

Ms. Diana Sharpe
Consulting Lawyer
Sly & Weigall
Goldfields House Circular Quay
Sydney 2000 Australia
Tel: 61-2-330-8449
Fax: 61-2-330-8111

Mr. Paul Shaw
General Manager Telecoms
Broadcast Communications Ltd.
147-161 Tory St PO Box 98
Wellington, New Zealand
Tel: 64-4-382-6108
Fax: 64-4-382-6066

Mr. Philip Sheen
Project Manager
Taiwan Fuji Xerox Corp
8F 112 Kuang Fu North Road
Taipei, Taiwan ROC
Tel: 886-2-752-5399
Fax: 886-2-776-5744

Mr. Bing Shen
Executive Director
Morgan Stanley
Rm. 150 Chia Hsin Bldg.
96 Chung Shan N. Road
Sec. 2 Taipei, Taiwan ROC
Tel: 886-2-561-5125
Fax: 886-2-536-3070

Mr. C.W. Shen
Secretary General
Directorate General of Telecomms
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3605
Fax: 886-2-394-7324

Mr. Shy-Shyan Shiau
Associate Administrator
Northern Taiwan Telecomms Administration
Anti-Corruption Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2522
Fax: 886-2-321-8761

Mr. Michael Shih
Hewlett-Packard Taiwan Ltd.
8F 337 Fu-Hsing N. Rd.
Taipei, Taiwan ROC
Tel: 886-2-717-9588

Mr. Yasuhiro Shintani
Manager Int'l Org Div
Kokusai Denshin Denwa Co. Ltd. (KDD)
3-2 Nishishinjuku 2-chome
Shinjuku-ku, Tokyo 163-03 Japan
Tel: 81-3-3347-6480
Fax: 81-3-3347-6470

Mr. Arbis Shipley
President
HTC Telecom
PO Box 279
Half Moon Bay, CA 94019 USA
Tel: 415-712-3200
Fax: 415-712-1219

Mr. Eddie Shiu
Communications Manager
United Airlines
Room 604
Swire House, Chater Road
Hong Kong
Tel: 852-801-6011
Fax: 852-877-0342

Ms. Priscilla Soalablai
Comptroller
Palau National Communications Corporation
P.O. Box 99
Palau PW 96940 Palau
Tel: 680-488-2606
Fax: 680-488-1888

Mr. Tjahjono Soerjodibroto
President
P.T. Indosat
Jl. Medan Mordeka Barat No. 21
Jakarta 10110 Indonesia
Tel: 62-21-380-2922
Fax: 62-21-370-484

Mr. Daniel Song
Senior Vice President
Alcatel TAISEL
4 Ming Shen St
Tu Chen Industrial District
Taipei Hsien, Taiwan ROC
Tel: 886-2-268-6141
Fax: 886-2-268-6001

Ms. Nancy Stern
Executive Director
Bell Atlantic International
1310 N Courthouse Rd 5th Flr
Arlington, VA 22201-2501 USA
Tel: 703-351-4595
Fax: 703-528-8644

Mr. Paul H. Stolz
President & Chief Executive Officer
Telecom Management Strategies Inc
8902 Frances Folsom SW
Tacoma, WA 98498-2520 USA
Tel: 206-297-3900
Fax: 206-581-5781

Mr. Chao-Cheng Su
Chief
Telecommunication Training Institute
Switching Technology Department
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9500
Fax: 886-2-963-9453

Mr. Sheng-Chin Teng
Deputy Director
Directorate General of Telecomms
Plant Department
31 Ai-Kuo E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3682
Fax: 886-2-707-2106

Mr. Tien-Lai Teng
Chief
Telecommunication Training Institute
Transmission Technology Department
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9340
Fax: 886-2-963-9453

Mr. C.P. Ting
Marketing Coordinator
REDCOM Laboratories Inc.
One Redcom Center
Victor, NY 14564-0995 USA
Tel: 716-924-7550
Fax: 716-924-6572

Mr. Bih-Chia Tsai
Engineer
Northern Taiwan Telecomms Administration
Traffic Department
42 Jenai Rd. Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2461
Fax: 886-2-396-2347

Mr. Duei Tsai
Director
Directorate General of Telecomms
Corporate Planning Department
31 Ai-Kuo E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-344-3888
Fax: 886-2-397-2254

Ms. Patricia P.S. Tsai
Chief
Data Communication Institute
Accounting Office
21 Hsinyi Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2515
Fax: 886-2-394-8404

Mr. C.S. Tsen
Chief Engineer
Directorate General of Telecomms
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3610
Fax: 886-2-394-7324

Mr. Peter Tseng
Alcatel Business Systems Taiwan Inc.
7F 420 Fu Hsing N. Rd.
Taipei, Taiwan ROC
Tel: 886-2-515-1688
Fax: 886-2-516-1788

Mr. W.P. Tseng
Vice Chairman
Directorate General of Telecomms
Research & Planning Committee
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-2698
Fax: 886-2-394-7324

Mr. Dsong-Yueh Tsuei
Administrator
Long Distance Telecomms Administration
Traffic Department
52 Chinshan S. Rd Sec.2
Taipei, Taiwan ROC
Tel: 886-2-344-2863
Fax: 886-2-351-4999

Dr. John Ure
Research Assoc Center of Asian Studies
Hong Kong University
Pokfulam Rd
Hong Kong
Tel: 852-859-2460
Fax: 852-559-5884

Mr. Lo Van Gemert
Vice President - Asia
BellSouth Int'l
1100 Peachtree St. NE
Suite 400
Atlanta, GA 30309-4599 USA
Tel: 404-249-4819
Fax: 404-249-4734

Mr. Christopher Vonwiller
Dir of Corporate Affairs
Telstra Corporation Limited
GPO Box 7000
Sydney, NSW 2001 Australia
Tel: 612-287-5400
Fax: 612-287-4415

Mr. Bill Wade
Vice President
HTC Telecom
PO Box 279
Half Moon Bay, CA 94019 USA
Tel: 415-712-3200
Fax: 415-712-1219

Mr. Gerald C. Wakefield
Partner
Middletons Moore & Bevins
7 MacQuarie Place
Sydney, NSW 2000 Australia
Tel: 612-390-8100
Fax: 612-247-2866

Mr. Robert M. Walp
Vice Chairman
General Communication Inc
2550 Denali Street #1000
Anchorage, AK 99503-2781 USA
Tel: 907-265-5613
Fax: 907-265-5676

Mr. Chi-Shen Wang
Managing Director
Telecomm Training Institute
Kaohsiung Center
36 Cheng-Ching Lane
Jen-Wu, Kaohsiung, Taiwan ROC
Tel: 886-7-244-7260
Fax: 886-7-372-0370

Mr. Ching-Guey Wang
Deputy Director
Southern Taiwan Telecomms Administration
Engineering Department
230 Linsen 1st Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-344-5701
Fax: 886-7-273-5994

Mr. Chu-Nan Wang
Division Chief
Directorate General of Telecommunications
Technology Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3633
Fax: 886-2-351-9514

Mr. Hui-Min Wang
Administrator Planning Dept
Central Taiwan Telecoms Administ
37 Shihfu Rd.
Taichung, Taiwan ROC
Tel: 886-4-288-2550
Fax: 886-4-227-4689

Mr. Jing-San Wang
Senior Engineer Corp Plan Dept
Directorate General of Telecoms
31 Ai-Kuo E Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3887
Fax: 886-2-397-2254

Mr. Kuei-Hsiang Cheng Wang
Chief
Telecommunication Training Institute
Teaching Affairs Office
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9300
Fax: 886-2-963-9453

Mr. Shao-Heng Wang
Associate Administrator
Long Distance Telecomms Administration
Personnel Office
52 Chinshan S. Rd. Sec.2
Taipei, Taiwan ROC
Tel: 886-2-344-2848
Fax: 886-2-356-9440

Mr. Wen-San Wang
Chief
Data Communication Institute
Information System Office
21 Hsinyi Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2391
Fax: 886-2-394-8404

Mr. Iee-Ray Wei
Chief Training Devt Office
Telecommunication Training Institute
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9280
Fax: 886-2-963-9453

Mr. John Witherspoon
Director Pacific Dialogue
San Diego State University
San Diego, CA 92182 USA
Tel: 619-463-1223
Fax: 619-463-3920

Mr. C.C. Wu
Director
International Telecomms Administration
International Relations Department
31 Aikuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3910
Fax: 886-2-396-6141

Mr. Ching-Tzu Wu
Division Chief
Northern Taiwan Telecomms Administration
Outside Plant Department
42 Jenai Rd, Sec.1
Taipei, Taiwan ROC
Tel: 886-2-396-6652
Fax: 886-2-396-6654

Mr. James M.S. Wu
Chief, Outside Plant Tech Dept
Telecommunication Training Institute
168 Minchu Rd
Panchiao, Taipei, Taiwan ROC
Tel: 886-2-963-9320
Fax: 886-2-963-9453

Mr. Kan-Wei Wu
Vice President Corporate Support
Seimens Telecommunications Limited
Taiwan ROC

Mr. Lung-Fu Wu
Division Chief
Southern Taiwan Telecomms Administration
Traffic Department
230 Linsen 1st Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-344-2730
Fax: 886-7-344-2790

Ms. Monica Wu
Manager
Shung Tong Electric Co. Ltd.
2F 37 Ching Tao E. Rd.
Taipei, Taiwan ROC
Tel: 886-2-356-0011
Fax: 886-2-351-3377

Mr. P.N. Wu
Director
Directorate General of Telecomms
Technical Department
31 Ai-Kuo E. Rd
Taipei, Taiwan ROC
Tel: 886-2-344-3631
Fax: 886-2-351-9514

Mr. Yao-Ming Wu
Director
Southern Taiwan Telecomms Administration
Planning Department
230 Linsen 1st Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-344-2100
Fax: 886-7-344-2190

Mr. Florencio Yamada
Member PNCC Board of Directors
Palau National Communications Corporation
P.O. Box 99
Palau PW 96940 Palau
Tel: 680-488-2606
Fax: 680-488-1888

Mr. Ching-Fang Yang
Engineer
Northern Taiwan Telecomms Administration
4th Construction Corps
111 Cheng-Yih S. Rd
San Chung
Taipei Hsien, Taiwan ROC
Tel: 886-2-976-4461
Fax: 886-2-973-6294

Mr. Kuei-Fang Yang
Division Chief
Northern Taiwan Telecomms Administration
Data Processing Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2264
Fax: 886-2-396-2840

Mr. Li-Shang Yang
Administrator
Northern Taiwan Telecomms Administration
Data Processing Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2098
Fax: 886-2-396-2840

Ms. Lily Yang
Manager
Northern Taiwan Telecomms Administration
Hsin-Tien Office
72 Sec.1 Pei-Hsin Rd
Hsin-Tien, Taiwan ROC
Tel: 886-2-913-0666
Fax: 886-2-917-3544

Mr. Andrew Yeh
Manager
Host Sea Ind. Co. LTD
6F-4 294 Sec.1
Tun Hwa S. Rd
Taipei, Taiwan ROC
Tel: 886-2-700-0449
Fax: 886-2-708-7810

Mr. Randolph T. Yeh
Managing Director
AT&T Taiwan Telecomms
6F Overseas Trust Bldg
477 Tun Hwa S Rd
Taipei, Taiwan ROC
Tel: 886-2-741-0051
Fax: 886-2-751-5714

Mr. S.C. Yeh
Deputy Managing Director
Long Distance Telecomms Administration
52 Chinsan S. Rd Sec.2
Taipei, Taiwan ROC
Tel: 886-2-344-2704
Fax: 886-2-341-2624

Mr. Y.C. Yeh
Chief Engineer
Long Distance Telecomms Administration
52 Chinshan S. Rd. Sec.2
Taipei, Taiwan ROC
Tel: 886-2-344-2650
Fax: 886-2-341-2624

Mr. Al Yoshimura
Director Int'l Market Management
AT&T
184 Liberty Corner Rd
Warren, NJ 07059 USA
Tel: 908-580-5300
Fax: 908-580-4118

Mr. Ro-Feng Yu
Associate Administrator
Northern Taiwan Telecomms Administration
Supply Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC
Tel: 886-2-344-2424
Fax: 886-2-321-5623

Mr. Y.T. Yu
American Express Bank Ltd
5F 214 Tun Hwa N. Rd
Taipei, Taiwan ROC
Tel: 886-2-714-9448
Fax: 886-2-714-9488

Mr. Chin-Yi Yue
Deputy Managing Director
Southern Taiwan Telecomms Administration
230 Linsen 1st Rd
Kaohsiung, Taiwan ROC
Tel: 886-7-344-2001
Fax: 886-7-273-5994

Mr. Ro-Feng Yu
Associate Administrator
Northern Taiwan Telecomms Administration
Supply Department
42 Jenai Rd Sec.1
Taipei, Taiwan ROC

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Directory of Participants

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

Alan Khoo
Vice President-Asia, US West International Inc.
Suite 1608, Exchange Square Tower Two, 8 Connaught Place, Central, Hong Kong
PHO: 852-845-4133 *FAX: 852-845-1269*

Al Yoshimura
Director, Int'l Market Management, AT&T
184 Liberty Corner Rd., Warren, NJ, 07059 USA
PHO: 908-580-5300 *FAX: 908-580-4118*

Andrew Jordan
Marketing Manager, Asia Satellite Telecoms Company Limited
23-24F, East Exchange Tower, 38-40 Leighton Road, Hong Kong
PHO: 852-805-6650 *FAX: 852-576-4111*

Andrew Yeh
Manager, Host Sea Ind. Co., LTD
6F-4, 294, Sec.1, Tun Hwa S. Rd., Taipei, Taiwan, ROC
PHO: 886-2-700-0449 *FAX: 886-2-708-7810*

Ante Ku
Research Fellow & Ph. D Student, CIRCIT and Monash University Australia
4 Riverside Quay, South Melbourne, Victoria, 3205 Australia
PHO: 61-3-616-8848 *FAX:*

Anthony N. Briscoe
Director, International, Telecom New Zealand International Ltd.
P.O. Box 1092, Wellington, New Zealand
PHO: 64-4-473-8444 *FAX: 64-4-473-1044*

Arbis Shipley
President, HTC Telecom
P.O. Box 279, Half Moon Bay, CA, 94019 USA
PHO: 415-712-3200 *FAX: 415-712-1219*

Arthur Hsieh
Attorney-at-Law, Evergreen International Law Office
Ste 802, 8F, 79 Roosevelt Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-369-1166 *FAX: 886-2-369-2222*

A.W. Chen
Associate Administrator, Corporate Planning Department, directorate General of Telecommunications
31 Ai Kuo E. Rd., Taipei, Taiwan, ROC
PHO:886-2-344-3887 *FAX: 886-2-397-2254*

Bih-Chia Tsai
Engineer, Traffic Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2461 *FAX: 886-2-396-2347*

Bill Wade
Vice President, HTC Telecom
P.O. Box 279, Half Moon Bay, CA, 94019 USA
PHO: 415-712-3200 *FAX: 415-712-1219*

Bor-Shenn Jeng
Director, Basic and Applied Research Laboratory, Telecommunications Laboratories
P.O. Box 71, Chungli, Taiwan, ROC
PHO: 886-3-424-4373 *FAX: 886-3-490-4004*

C. C. Wu
Director, International Relations Department, International Telecommunications Administration
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3910 *FAX: 886-2-396-6141*

Chao-Sheng Su
Chief, Switching Technology Department, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9500 *FAX: 886-2-963-9453*

Chao-Shiuan Liu
Minister, Ministry of Transportation and Communications
2 Chang Sha Street, Sec. 1, Taipei, Taiwan, ROC
PHO: 886-2-349-2000 *FAX: 886-2-389-6009*

Chen-Fang Ma
Vice Minister, Ministry of Transportation and Communications
2 Chang Sha Street, Sec. 1, Taipei, Taiwan, ROC
PHO: 886-2-349-2010 *FAX: 886-2-381-4684*

Cheng-Luh Chen
Deputy Managing Director, International Telecommunications Administration
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3704 *FAX: 886-2-312-2235*

Cheng-Min Hwang
Deputy Director, Engineering Department, Central Taiwan Telecommunications Administration
37 Shihfu Rd, Taichung, Taiwan, ROC
PHO: 886-4-288-2401 *FAX: 886-4-227-4689*

Cheng-Yung Lee
Associate Administrator, Business Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3636 *FAX: 886-2-393-4957*

Chieh-Chih Chen
Division Chief, Plant Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3682 *FAX: 886-2-707-2106*

Chien-Tung Liu
Section Chief, Transmission Department, Long Distance Telecommunications Administration
52 Chinshan S. Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-344-3065 FAX: 886-2-397-2715

Chih-Fang Yang
Engineer, 4th Construction Corps, Northern Taiwan Telecommunications Administration
111 Cheng-Yih S.Rd., San Chung, Taipei Hsien, Taiwan, ROC
PHO: 886-2-976-4461 FAX: 886-2-973-6294

Chin-Chen Ko
Senior Engineer, Plant Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3682 FAX: 886-2-707-2106

Ching-Chich Lin
Chief, Computer Science Department, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9370 FAX: 886-2-963-9453

Ching-Guey Wang
Deputy Director, Engineering Department, Southern Taiwan Telecommunications Administration
230 Linsen 1st Rd., Kaohsiung, Taiwan, ROC
PHO: 886-7-344-5701 FAX: 886-7-273-5994

Ching-Sung Lu
Director, Information Technology Laboratory, Telecommunications Laboratories
P.O. Box 71, Chungli, Taiwan, ROC
PHO: 886-3-424-4377 FAX: 886-3-490-4004

Ching-Tzu Wu
Division Chief, Outside Plant Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-396-6652 FAX: 886-2-396-6654

Chin-Lung Chen
Senior Engineer, Technology Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-2010 FAX: 886-2-351-9514

Chin-Rei Lin
Associate Engineer, Engineering Department, Long Distance Telecommunications Administration
52 Chinshan S. Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-344-3035 FAX: 886-2-351-0944

Chin-Yi Yue
Deputy Managing Director, Southern Taiwan Telecommunications Administration
230 Linsen 1st Rd., Kaohsiung, Taiwan, ROC
PHO: 886-7-344-2001 FAX: 886-7-273-5994

Chi-Shen Wang
Managing Director, Telecommunication Training Institute-Kaohsiung Center
36 Cheng-Ching Lane, Jen-Wu, Kaohsiung, Taiwan, ROC
PHO: 886-7-244-7260 *FAX: 886-7-372-0370*

Chou-Kuang Hsieh
Engineer, Outside Plant Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3136 *FAX: 886-2-396-3344*

Christopher M. Harland
Executive Director, Group Head Telecoms, Morgan Stanley, Inc.
1251 Avenue of the Americas, New York, NY, 10020 USA
PHO: 202-703-8320 *FAX: 202-703-6476*

Christopher Vonwiller
Director of Corporate Affairs, Telstra Corporation Limited
GPO Box 7000, Sydney, NSW, 2001 Australia
PHO: 612-287-5400 *FAX:*

Chu-Chuen Hu
Chief, Business and Traffic Department, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9540 *FAX: 886-2-963-9453*

Chuen-Yang Lin
Chief, Management Science Department, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9420 *FAX: 886-2-963-9453*

Chu-Nan Wang
Division Chief, Technology Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3633 *FAX: 886-2-351-9514*

Chun-Fun Lee
Deputy Managing Director, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9262 *FAX: 886-2-963-9453*

Chung-Chi Chao
Associate Engineer, Planning Department, Long Distance Telecommunications Administration
52 Chinshan S. Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-344-2808 *FAX: 886-2-394-0814*

Chungming An
Regional Director, Operations Systems Business Development, Asia Pacific Region, AT&T Taiwan Inc.
249 Sec.1 Tun Hwa S.Rd., Taipei, Taiwan, ROC
PHO: 886-2-775-6341 *FAX: 886-2-775-6356*

C.J. Lee
Deputy Managing Director, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2003   FAX: 886-2-341-2564

C. L. Lin
Director, Plant Department, International Telecommunications Administration
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3710   FAX: 886-2-392-0454

C. P. Ting
Marketing Coordinator, REDCOM Laboratories, Inc.
One Redcom Center, Victor, NY, 14564-0995 USA
PHO: 716-924-7550   FAX: 716-924-6572

C.S. Tsen
Chief Engineer, Directorate General of Telecommunications
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3610   FAX: 886-2-394-7324

Cubbon Sabrina
Regional Manager, Asia Satellite Telecom Company Ltd.
23/24F, East Exchange Tower, 38-50 Leighton Rd., Hong Kong
PHO: 852-805-6650   FAX: 852-576-4111

C.Y. Chow
Director, Traffic & Commercial Department, International Telecommunications Administration
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3766   FAX: 886-2-322-5104

C.W. Shen
Secretary General, Directorate General of Telecommunications
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3605   FAX: 886-2-394-7324

Dale T. Rogers
Marketing Manager, Int'l Business, AT&T Network Systems
2300 Camino Ramon, Ste 200, San Ramon, CA, 94583-1354 USA
PHO: 510-815-8246   FAX: 510-815-8163

Daniel Song
Senior Vice President, Taiwan International Standard Electronics Ltd. Alcatel TAISEL
4 Ming Shen Street, Tu Chen Industrial District, Tu Chen, Taipei Hsien, Taiwan, ROC
PHO: 886-2-268-6141   FAX: 886-2-268-6001

David Ecret
Public Affairs and Communications Manager, Guam Telephone Authority
P.O. Box 9008, Tamuning, Guam, 96031 USA
PHO: 671-649-2147   FAX: 671-649-4821

Diana Sharpe
Consulting lawyer, Sly & Weigall
Goldfields House, Circular Quay, Sydney, 2000 Australia
PHO: 61-2-330-8449 *FAX: 61-2-330-8111*

Dsong-Yueh Tsuei
Administrator, Traffic Department, Long Distance Telecommunications Administration
52 Chinshan S. Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-344-2863 *FAX: 886-2-351-4999*

Duei Tsai
Director, Corporate Planning Department, Directorate General of Telecommunications
31 Ai-Kuo E.Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3888 *FAX: 886-2-397-2254*

Eiji Hayashi
General Manager, Engineering Coordination Division, NEC Corporation
7-1, Shiba 5-Chome, Minato-Ku, Tokyo, 108-01 Japan
PHO: 81-3-3798-6593 *FAX: 81-3-3798-6598*

Eui k. Koh
Regional Director for Asia/Pacific, INTELSAT
3400 International Drive, NW, Washington, DC, 20008-3098 USA
PHO: 202-944-7236 *FAX: 202-944-7925*

Evelyn Chen
Associate Administrator, Personnel Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3667 *FAX: 886-2-395-2763*

Feng Chian
President, Vanguard Information Center Inc.
4F, 7 Lane 50, Sec.3, Nan Kang Rd., Taipei, Taiwan, ROC
PHO: 886-2-785-8900 *FAX: 886-2-785-2055*

Florenclo Yamada
Member, PNCC Board of Directors, Palau National Communications Corporation
P.O. Box 99, Palau PW, 96940 Palau
PHO: 680-488-2606 *FAX: 680-488-1888*

Fu-Hsiung Chen
Senior Engineer, Research & Planning Committee Secretariat, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3622 *FAX: 886-2-321-8953*

Fu-Hsiung Peng
Deputy Director, General Affairs Department,, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3552 *FAX: 886-2-321-8953*

Gerald C. Wakefield
Partner, Middletons Moore & Bevins
7 MacQuarie Place, Sydney, NSW, 2000 Australia
PHO: 612-390-8100 FAX: 612-247-2866

Gerald E. Moriarty
Managing Director, Broadcast Communications Ltd.
147-161 Tory St, P.O. Box 98, Wellington, New Zealand
PHO: 64-4-382-6108 FAX: 64-4-382-6066

George Darby
Attorney-at-Law, Law Offices of George E. Darby
Box 61450, Honolulu, HI, 96839-1450 USA
PHO: 808-955-1445 FAX: 808-955-2936

George J. Boughton
Professor of History, University of Guam
UOG Station, Mangilao, GU, 96923 USA
PHO: 671-734-9233 FAX: 671-734-7930

Hang-Tung Hwang
Director, Accounting Department, Central Taiwan Telecommunications Administration
37 Shihfu Rd, Taichung, Taiwan, ROC
PHO: 886-4-288-2305 FAX: 886-4-227-4689

Hideo Kato
Assoc Gen Man, Int'l Telecom Bus Group, Fujitsu Ltd.
3-12, Higashi Shinagawa, 2-Chome, Shinagawa-Ku, Tokyo, 104 Japan
PHO: 81-3-5460-7154 FAX: 81-3-5460-7366

Ho-Ming Huang
Managing Director, Hewlett Packard Taiwan Ltd.
8F, 337 Fu-Hsing N. Rd., Taipei, Taiwan, ROC
PHO: 886-2-717-9588 FAX: 886-2-715-0851

Horng-Hsiuan Luo
Division Chief, Business Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2233 FAX: 886-2-393-9554

Hsien-Wu Lai
Special Assistant to President, TECOM Co., Ltd.
23 R&D Road, 2 Hsin-Chu, Taiwan, ROC
PHO: 886-35-775-141 FAX: 886-35-776-855

Hsi-Ho Lin
Director, Plant Department, Central Taiwan Telecommunications Administration
37 Shihfu Rd, Taichung, Taiwan, ROC
PHO: 886-4-288-2445 FAX: 886-4-227-4689

Hsiu-Chung Chen
Administrator, Corporate Planning Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3964 *FAX:886-2-397-2254*

Hui-Min Wang
Administrator, Planning Department, Central Taiwan Telecommunications Administration
37 Shihfu Rd, Taichung, Taiwan, ROC
PHO: 886-4-288-2550 *FAX: 886-4-227-4689*

Iee-Ray Wei
Chief, Training Development Office, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9280 *FAX: 886-2-963-9453*

Ivor Knight
COMSAT World Systems

PHO: *FAX:*

James M.S. Wu
Chief, Outside Plant Technology Department, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9320 *FAX: 886-2-963-9453*

James Savage
Pacific Telecommunications Council
2454 S. Beretania St. Suite 302, Honolulu, Hawaii, 96826-1598 USA
PHO: 1-808-941-3789 *FAX: 1-808-944-4874*

Jane N. Hurd
Vice President, Government & International Marketing, Telephony International, Inc.
1120 C St, SE, Washington, DC, 20003-1402 USA
PHO: 202-675-4585 *FAX: 202-675-4586*

Janet Pearce
Deputy Director, US National Committee for PECC
1755 Mass Ave, Ste 412, Washington, DC, 20036 USA
PHO: 202-745-7444 *FAX: 202-797-1355*

Janusz Buczkowski
Technologica Pty Ltd
48 Hamilton St, Lane Cove, NSW, 2066 Australia
PHO: 612-427-5014 *FAX: 612-418-6614*

Jeen-Cheng Huang
Deputy Chief Engineer, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2005 *FAX: 886-3-391-6904*

Jeng-Nan Lin
Division Chief, Traffic Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3696 *FAX: 886-2-322-4026*

Jerry Nowicki
Vice President, ESI Systems
4157 Quail Run Drive, Danville, CA, 94506 USA
PHO: 510-736-6824 *FAX: 510-736-9386*

Jing-San Wang
Senior Engineer, Corporate Planning Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3887 *FAX: 886-2-397-2254*

Joan Demei
Palau National Communications Corp.

PHO: *FAX:*

John C.C. Hsueh
Deputy Managing Director, Data Communication Institute
21 Hsinyi Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3011 *FAX: 886-2-344-2606*

John Craven
Partner, Andersen Consulting
19F, 360 Elizabeth St., Melbourne, Vic, 3000 Australia
PHO: 61-3-286-7000 *FAX: 61-3-286-7100*

John L. MacDuffie
Managing Director, AT&T Hong Kong Ltd
24F Three Exchange Square, 8 Connaught Place, Central, Hong Kong
PHO: 852-846-2793 *FAX: 852-845-0221*

John Quigley
Special Advisor, Dept. of Communications, Canada
c/o 300 Slater St., Rm 2030, JTN, Ottawa, Ontario, K1A 0C8 Canada
PHO: 613-998-3166 *FAX: 613-952-1203*

John Ure
Research Associate, Center of Asian Studies, Hong Kong University
Pokfulam Rd., Hong Kong
PHO: 852-859-2460 *FAX: 852-559-5884*

John Witherspoon
Director, Pacific Dialogue, San Diego State University
San Diego, CA, 92182 USA
PHO: 619-463-1223 *FAX: 619-463-3920*

Ju-Ching Fuh
Chief, 3rd Construction Corps, Northern Taiwan Telecommunications Administration
83 Shinnyih Rd, Panchiao, Taipei Hsien, Taiwan, ROC
PHO: 886-2-950-9981 *FAX: 886-2-956-2204*

Jui-Hsiung Chen
Deputy Managing Director, International Telecommunications Administration
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3702 *FAX: 886-2-392-9464*

Kan-Wei Wu
Vice President, Corporate Support, Siemens Telecommunications Ltd.
Taiwan, ROC
PHO: *FAX:*

Karl Erik Rye
General Manager, Palau National Communications Corp.
P.O. Box 99, Palau PW, 96940 Palau
PHO: 680-488-2606 *FAX: 680-488-1888*

Karl Rossiter
Television New Zealand, Ltd.

PHO: *FAX:*

Keh-Yeong Liu
Deputy Director, Personnel Department, Southern Taiwan Telecommunications Administration
230 Linsen 1st Rd., Kaohsiung, Taiwan, ROC
PHO: 886-7-344-3101 *FAX: 886-7-273-5994*

Kinbo B. Chen
Managing Director, International Telecommunications Administration
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3700 *FAX: 886-2-392-9464*

King-Teh Lee
Deputy Executive Secretary, Research and Planning Committee, Directorate General of Telecommunications
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3622 *FAX: 886-2-321-8953*

Kuang-Hsiung Lin
Chief, Personnel Office, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9530 *FAX: 886-2-963-9453*

Kuang-Nan Chang
Deputy Director, Business Department, Southern Taiwan Telecommunications Administration
230 Linsen 1st Rd., Kaohsiung, Taiwan, ROC
PHO: 886-7-344-2201 *FAX: 886-7-273-5994*

Kuang-Yi Chen
Director, Outside Plant Technology Laboratory, Telecommunications Laboratories
P.O. Box 71, Chungli, Taiwan, ROC
PHO: 886-3-424-4451 *FAX: 886-3-490-4004*

Ku-Ching Cheng
Director, Engineering Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3026 *FAX: 886-2-341-6119*

Kuei-Fang Yang
Division Chief, Data Processing Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2264 *FAX: 886-2-396-2840*

Kuei-Hsiang Cheng Wang
Chief, Teaching Affairs Office, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9300 *FAX: 886-2-963-9453*

Kwo-Sen Chen
Engineer, Panchiao Office, Northern Taiwan Telecommunications Administration
5F 166 Minchu Rd., Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-964-1240 *FAX: 886-2-964-1164*

Lang-Chee Chang
Chief, Technical Office, Data Communication Institute
21 Hsinyi Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2501 *FAX: 886-2-394-8404*

Lang-Yueh Hwang
Division Chief, Engineering Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3034 *FAX: 886-2-344-2246*

L.B. Lan
Director, Business Department, Directorate General of Telecommunications
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3637 *FAX: 886-2-393-4957*

Lily Cheng
Associate Administrator, Accounting Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3232 *FAX: 886-2-321-7478*

Lily Yang
Manager, Hsin-Tien Office, Northern Taiwan Telecommunications Administration
72, Sec.1, Pei-Hsin Rd., Hsin-Tien, Taiwan, ROC
PHO: 886-2-913-0666 *FAX: 886-2-917-3544*

Li-Shang Yang
Administrator, Data Processing Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2098 *FAX: 886-2-396-2840*

Lung-Fu Wu
Division Chief, Traffic Department, Southern Taiwan Telecommunications Administration
230 Linsen 1st Rd., Kaohsiung, Taiwan, ROC
PHO: 886-7-344-2730 *FAX: 886-7-344-2790*

Lung-Sing Liang
Director, Switching Technology Laboratory, Telecommunications Laboratories
P.O. Box 71, Chungli, Taiwan, ROC
PHO: 886-3-424-4392 *FAX: 886-3-490-4004*

Mao-Fang Lin
Deputy Director, Traffic Department, Central Taiwan Telecommunications Administration
37 Shihfu Rd., Taichung, Taiwan, ROC
PHO. 886-4-288-2269 *FAX: 886-4-227-4689*

Maria Chou
Technical Manager, Operations Systems Business Development, AT&T Taiwan Inc.
249 Sec.1, Tun Hwa S. Rd., Taipei, Taiwan, ROC
PHO: 886-2-775-6398 *FAX: 886-2-775-6356*

Michael Bai
Associate Administrator, Business Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3153 *FAX:*

Michael Chen
Institute for Information Industry
11F, 106 Sec.2, Ho Ping E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-377-6100 *FAX: 886-2-378-1339*

Michael Chow
Vice President, Asia Region, BellSouth International (Asia/Pacific), Inc.
80 Gloucester Rd., 22F, Wanchai, Hong kong
PHO: 852-528-4567 *FAX: 852-865-6757*

Michael Liu
Deputy Chief, 1st Construction Corps, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3391 *FAX:*

Michael Reynolds
Executive Director-Mrkting & Bus Development, BellSouth International (Asia-Pacific), Inc.
22F, 80 Gloucester Rd., Wanchai, Hong Kong
PHO: 852-528-4567 *FAX: 852-865-6757*

Michael Shih
Hewlett-Packard Taiwan Ltd.
8F, 337 Fu-Hsing N. Rd., Taipei, Taiwan, ROC
PHO: 886-2-717-9588 *FAX:*

Ming-Ju Hwang
Senior Engineer, Regulatory Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3312 *FAX: 886-2-396-2095*

Ming-Shiang Chung
Division Chief, Switching Department, Long Distance Telecommunications Administration
52 Chinshan S. Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-344-3121 *FAX: 886-2-394-5024*

Misa Hirono
Senior Staff, KDD
3-2 Nishi-Shinjuku 2-Chome, Shinjuku-Ku, Tokyo, 163 Japan
PHO: 81-3-3347-6479 *FAX: 81-3-3347-6470*

Mitchell Schoenberg
Director, American Express Bank Ltd.
5F, 214 Tun Hwa N. Rd., Taipei, Taiwan, ROC
PHO: 886-2-714-9448 *FAX: 886-2-714-9488*

Monica Wu
Manager, Shung Tong Electric Co., Ltd.
2F, 37 Ching Tao E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-356-0011 *FAX: 886-2-351-3377*

Myng-Siung Lin
Far East Engineering Consultant
5F, 411 Jiann Gwo 1 Road, Kaohsiung, Taiwan, ROC
PHO: 886-7-224-9166 *FAX:*

Nam-Jin Cho
Managing Director, Overseas Cooperation Dept. Korea Telecom
Sejongno, Chongno-Gu, Seoul, 110-777 Republic of Korea
PHO: 82-2-750-3810 *FAX: 82-2-750-3830*

Nancy Stern
Executive Director, Bell Atlantic International
1310 N Courthouse Rd., 5F, Arlington, VA, 22201-2501 USA
PHO: 703-351-4595 *FAX: 703-528-8644*

Nien-Keng Kao
Director, Planning Department, Central Taiwan Telecommunications Administration
37 Shihfu Rd, Taichung, Taiwan, ROC
PHO: 886-4-288-2541 *FAX:886-4-227-4689*

N. Mark Lopianowski
Director, Teleconsult Ltd
402 W. Pender St., Ste 700, Vancouver, BC, V6B 1T6 Canada
PHO: 604-684-1144 *FAX: 604-687-7289*

Ora Barber
Pacific Telecommunications Council
2454 S. Beretania St. Suite 302, Honolulu, Hawaii, 96826-1598 USA
PHO: 1-808-941-3789 *FAX: 1-808-944-4874*

Pao-Jen Hsu
Assistant Administrator, Regulatory Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3295 *FAX: 886-2-396-2095*

Pao-Lien Ma
President, Shung Tong Electric Co., Ltd.
2F, 37 Ching Tao E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-356-0011 *FAX: 886-2-351-3377*

Patricia, P.S. Tsai
Chief, Accounting Office, Data Communication Institute
21 Hsinyi Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2515 *FAX: 886-2-394-8404*

Paul H. Stolz
President & Chief Executive Officer, Telecom Management Strategies Inc.
8902 Frances Folsom, SW, Tacoma, WA, 98498-2520 USA
PHO: 206-297-3900 *FAX: 206-581-5781*

P.C. Chen
Deputy Director General, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3603 *FAX: 886-2-394-7324*

Perry Peng
Telecom Division Manager, Raychem Taiwan Ltd.
4F, 542-4 Chung Cheng Rd., Hsintien 231, Taipei, Taiwan, ROC
PHO: 886-2-218-9155 *FAX: 886-2-218-1134*

Peter Branson
Director of Service Provision, Hongkong Telecom
GPO Box 9896, 34F Office Tower, Convention Plaza, 1 Harbour Rd., Wanchai, Hong Kong
PHO: 852-888-2222 *FAX: 852-824-2424*

Peter Hong
President, Asiacom Corp.
10F-2, 128 Sec.3, Ming Sheng E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-718-5511 *FAX: 886-2-718-1717*

Peter Tseng
Alcatel Business Systems Taiwan, Inc.
7F, 420 Fu-Hsing N Rd., Taipei, Taiwan, ROC
PHO: 886-2-515-1688 *FAX: 886-2-516-1788*

Ping-Jsai Lu
Deputy Managing Director, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9261 *FAX: 886-2-963-9453*

P.N. Wu
Director, Technical Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3631 *FAX: 886-2-351-9514*

Ping-Wen Hsu
Managing Director, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9260 *FAX: 886-2-963-9453*

Priscilla Soalablai
Comptroller, Palau National Communications Corporation
P.O. Box 99, Palau PW, 96940 Palau
PHO: 680-488-2606 *FAX: 680-488-1888*

P.Y. Lee
Chairman, AT&T Taiwan Telecommunications
6F, Overseas Trust Bldg.,477 Tun Hwa S. Rd., Taipei, Taiwan, ROC
PHO: 886-2-741-0051 *FAX: 886-2-751-5714*

Randolph T. Yeh
Managing Director, AT&T Taiwan Telecommunications
6F, Overseas Trust Bldg., 477 Tun Hwa S. Rd., Taipei, Taiwan, ROC
PHO: 886-2-741-0051 *FAX: 886-2-751-5714*

Raynald Leconte
Representative, France Telecom
World Trade Center 8F, J1, Jend, Sudirman Kay, 29-31, Jakarta, 12920 Indonesia
PHO: 62-21-521-1850 *FAX:*

Reinhard Ilgner
Director, GTE
245 Perimeter Center Parkway, Atlanta, CA, 30346 USA
PHO: 404-391-1713 *FAX: 404-391-8568*

Richard J. Barber
Executive Director, Pacific Telecommunications Council
2454 S. Beretania St. Suite 302, Honolulu, Hawaii, 96826-1598 USA
PHO: 1-808-941-3789 *FAX: 1-808-944-4874*

Robert Lu
Division Manager, Business Equipments Business Group, Aurora Corporation
15F, 2, Sec.5, Hsin-Yih Rd., Taipei, Taiwan, ROC
PHO: 886-2-728-6120 *FAX: 886-2-728-6187*

Robert M. Walp
Vice Chairman, General Communication, Inc.
2550 Denali Street, #1000, Anchorage, AK, 99503-2781 USA
PHO: 907-265-5613 *FAX: 907-265-5676*

Ro-Feng Yu
Associate Administrator, Supply Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec 1, Taipei, Taiwan, ROC
PHO: 886-2-344-2424 *FAX: 886-2-321-5623*

Ronald J. Kulczynski
Director Correspondent Relations, AT&T Hong Kong Ltd.
24F Three Exchange Square, 8 Connaught Place, Central, Hong Kong
PHO: 852-846-2731 *FAX: 852-845-0221*

Rong-Chi Chiang
Chief, 2nd Construction Corps, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec 1, Taipei, Taiwan, ROC
PHO: 886-2-344-3423 *FAX: 886-2-391-7524*

R.S. Hung
Director, General Affairs Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3487 *FAX: 886-2-356-8306*

S.C. Lu
Director, Department of Post & Telecom of Ministry of Transportation and Communications
2 Chang Sha Street Sec. 1, Taipei, Taiwan, ROC
PHO: 882-2-349-2200 *FAX: 886-2-381-4684*

Scott Olin
Director-Project Dev & Implementation, BellSouth International (Asia/Pacific), Inc.
22F, 80 Gloucester Rd., Wanchai, Hong Kong
PHO: 852-528-4567 *FAX: 852-865-6757*

S. C. Yeh
Deputy Managing Director, Long Distance Telecommunications Administration
52 Chinshan S. Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-344-2704 *FAX: 886-2-341-2624*

Shaio Tung Chang
Chief, Planning Office, Data Communication Institute
21 Hsinyi Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2503 *FAX: 886-2-344-2121*

Shao-Heng Wang
Associate Administrator, Personnel Office, Long Distance Telecommunications Administration
52 Chinshan S. Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-344-2848 *FAX: 886-2-356-9440*

Sharon G. Nakama
Programs Manager, Pacific Telecommunications Council
2454 S. Beretania St. Suite 302, Honolulu, Hawaii, 96826-1598 USA
PHO: 1-808-941-3789 *FAX: 1-808-944-4874*

Shen-Cheng Chou
Division Chief, Plant Department, Southern Taiwan Telecommunications Administration
230 Linsen 1st Rd., Kaohsiung, Taiwan, ROC
PHO: 886-7-344-5202 *FAX:*

Sheng-Chin Teng
Deputy Director, Plant Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3682 *FAX: 886-2-707-2106*

Shigeo Miyoshi
Senior Manager,Planning & Research, I.A.D.Nippon Telegraph and Telephone Corp. (NTT)
1-1-6, Uchisaiwai-Cho, Chiyoda-Ku, Tokyo, 100-19 Japan
PHO: 81-3-3509-3253 *FAX: 81-3-3509-8188*

Shi-Ming lu
Senior Engineer, Traffic Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3696 *FAX: 886-2-322-4026*

Shin H. Peng
Division Manager, Raychem Taiwan Limited
4F, #542-4 Chung Cheng Rd., Hsin Tien City, Taiwan, Taipei
PHO: *FAX:*

Shu-Mei Hsu
Associate Administrator, Training Development Office, Telecommunication Training Institute
168 Minchu Rd., Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9293 *FAX:886-2-963-9453*

Shyh-Chour Lin
Associate Administrator, Personnel Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2521 *FAX: 886-2-395-1429*

Shyh-Yung Chen
Deputy Director, Business Department, Central Taiwan Telecommunications Administration
37 Shihfu Rd, Taichung, Taiwan, ROC
PHO: 886-2-288-2322 *FAX: 886-2-227-4689*

Shyi-Sen Liu
Engineer, Equipment Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3215 *FAX: 886-2-321-4599*

Shy-Shyan Shiau
Associate Administrator, Anti-corruption Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2522 *FAX: 886-2-321-8761*

Sophia Cheng
Section Chief, Business Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-5688 *FAX: 886-2-393-4957*

S.S. Chiang
Associate Director, Taiwan International Standard Electronics Ltd.
4 Ming Shen Street, Tu Chen Industrial District, Tu Chen, Taipei Hsien, Taiwan, ROC
PHO: 886-2-268-6702 *FAX: 886-2-268-6001*

Stephen Doyle
Regional Manager, Operations Asia/Pacific, Cable & Wireless (Pacific)
22F, Office Tower, Convention Plaza, 1 Harbour Rd., Hong Kong
PHO: 852-888-8723 *FAX: 852-868-5200*

Steven Y. Chen
Director General, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3601 *FAX: 886-2-394-7324*

S.T. King
Managing Director, United Fiber Optic Communication Inc.
5F-5, 18 Chinshan S. Rd., Sec. 2, Taipei, Taiwan, ROC
PHO: 886-2-396-5222 *FAX: 886-2-396-5221*

Stone Lee
Director, AT&T-IOD
12F, 249, Sec. 1, Tun Hwa South Rd, Taipei, Taiwan, ROC
PHO: 886-2-775-6333 *FAX: 886-2-775-6389*

Sun-Chi Lin
Director, Technical Service Department, Telecommunications Laboratories
P.O. Box 71, Chungli, Taiwan, ROC
PHO: 886-3-424-4220 *FAX: 886-3-490-4004*

Susan S. Huang
Associate, Investment Banking Division, Morgan Stanley Asia, Ltd.
30F,Three Exchange Square, Hong Kong
PHO: 852-848-5664 *FAX: 852-868-5321*

Tedson Meyers
Attorney-at-aw, Partner, Reid & Priest
701 Pennsylvania Ave, NW, Ste 800, Washington, DC, 20004-2608 USA
PHO: 202-508-4005 *FAX: 202-508-4015*

Teh-Feng Jen
Associate Administrator, Personnel Department, Directorate General of Telecommunications
31 Ai-Kuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3667 *FAX: 886-2-395-2763*

Tern-Han Hwang
Chief, Personnel Office, Data Communication Institute
21 Hsinyi Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2516 *FAX: 886-2-394-8404*

Tien-Kuei Chen
Deputy Manager, Keelung Office, Northern Taiwan Telecommunications Administration
299 Jen-I Rd., Keelung, Taiwan, ROC
PHO: 886-2-424-4310 *FAX:*

Tien-Lai Teng
Chief, Transmission Technology Department, Telecommunication Training Institute
168 Minchu Road, Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963-9340 *FAX: 886-2-963-9453*

T.I. Liao
Soung Pu Technical Engineering Co.
230 Kwang Hsing Rd., Tai Ping Hsiang, Taichung Hsien, Taiwan, ROC
PHO: 886-4-278-6895 *FAX:*

T.K. Mao
Vice Minister, Ministry of Transportation and Communications
2 Chang Sha Street Sec. 1, Taipei, Taiwan, ROC
PHO: 882-2-349-2020 *FAX: 886-2-381-4684*

Toru Kamahara
Executive Vice President, Japan Telecoms Eng & Consulting Service
2-29-5 Nishi-Gotanda, Shinagawa-Ku, Tokyo, 141 Japan
PHO: 81-3-3495-5211 *FAX: 81-3-3495-5219*

Tsun-I Cheng
Director, Planning Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3260 *FAX:886-2-392-0982*

Victor C. Ku
Managing Director, Siemens Telecom Systems Ltd.
6 Weng Ming 1st Street, Kuei Shan Shiang, Taoyuan Hsien, Taiwan, ROC
PHO: 886-3-328-8588 *FAX:886-3-328-8688*

Vincent Chih
Manager, Operations Systems Business Development, AT&T Taiwan Inc.
12F, Overseas Trust Bldg., 249, Sec.1, Tun Hwa S. Rd., Taipei, Taiwan, ROC
PHO: 886-2-775-6353 FAX: 886-2-775-6356

Wen-Chung Pang
Director, Personnel Department, Central Taiwan Telecommunications Administration
37 Shihfu Rd, Taichung, Taiwan, ROC
PHO: 886-4-288-2365 FAX: 886-4-227-4689

Wen-Hsiang Yang
Chief, Teaching Aid Office, Telecommunication Training Institute
168 Mingchu Rd., Panchiao, Taipei, Taiwan, ROC
PHO: 886-2-963 9400 FAX: 886-2-963-9453

Wen-San Wang
Chief, Information System Office, Data Communication Institute
21 Hsinyi Rd., Sec. 1, Taipei, Taiwan, ROC
PHO: 886-2-344-2391 FAX: 886-2-394-8404

W. H. Chen
Director, General Planning Department, International Telecommunications Administration
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3897 FAX: 886-2-322-4079

William Cheng
Manager, Fujitsu Limited Taipei
Sunglow Bldg., 8F, 66 Sung Chiang Rd., Taipei, Taiwan, ROC
PHO: 886-2-561-7715 FAX: 886-2-536-7454

Winifred Chao
Director, Bell Atlantic International, Inc.
1310 N. Court House Rd., 5F Arlington, VA, 22201 USA
PHO: 703-875-8830 FAX: 703-351-4527

W.P. Tseng
Vice Chairman, Research & Planning Committee, Directorate General of Telecommunications
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-2698 FAX:886-2-394-7324

W.S. Lai
President, Cosmopolitan Electric Industrial Co.
7F, 174 Sec.2, Ming Sheng E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-501-2345 FAX: 886-2-503-4045

Yao-Ming Wu
Director, Planning Department, Southern Taiwan Telecommunications Administration
230 Linsen 1st Rd., Kaohsiung, Taiwan, ROC
PHO: 886-7-344-2100 FAX: 886-7-344-2190

Yasuhiro Shintani
Manager, Int'l Org Div, Kokusai Denshin Denwa Co., Ltd. (KDD)
3-2, Nishishinjuku 2-Chome, Shinjuku-Ku, Tokyo, 163-03 Japan
PHO: 81-3-3347-6480 *FAX: 81-3-3347-6470*

Yasukuni Kotaka
Vice President, NEC Corporation
7-1, Shiba 5-Chome, Minato-Ku, Tokyo, 108-01 Japan
PHO: 81-3-3798-6506 *FAX: 81-3-3798-6598*

Yasuo Koseki
Senior Managing Director, Kokusai Denshin Denwa Co., Ltd.
3-2, Nishi-Shinjuku 2-Chome, Shinjuku-Ku,Tokyo, 163 Japan
PHO: 81-3-3347-7531 *FAX: 81-3-3347-7548*

Y.C. Yeh
Chief Engineer, Long Distance Telecommunications Administration
52 Chinshan S. Rd., Sec 2, Taipei, Taiwan, ROC
PHO: 886-2-344-2650 *FAX: 886-2-341-2624*

Yih-Kuang Liu
Division Chief, Equipment Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-541-2346 *FAX:*

Yih-Maw Lai
Engineer, Equipment Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3215 *FAX: 886-2-321-4599*

Ying-Chou Lin
Deputy Managing Director, Southern Taiwan Telecommunications Administration
230 Linsen 1st Rd., Kaohsiung, Taiwan, ROC
PHO: 886-7-344-2000 *FAX: 886-7-273-5994*

Ying Price
Chief, Commercial Section, American Institute in Taiwan
32F,333 Keelung Rd., Sec. 1, International Trade Tower, Taipei, Taiwan, ROC
PHO: 886-2-720-1550 *FAX: 886-2-757-7162*

Y.K.Chen
Chairman, Telsis Technology Ltd.
29-3 sec.1, Jen Ai Rd. Taipei, Taiwan, ROC
PHO: 886-2-351-5266 *FAX: 886-2-351-5266*

Y.N. Huang
Deputy Director General, Directorate General of Telecommunications
31 Aikuo E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-344-3604 *FAX: 886-2-394-7324*

Young Lin
Marketing Manager, Ericsson Taiwan Ltd.
14F-B,18, Sec.4, Nan King E. Rd., Taipei, Taiwan, ROC
PHO: 886-2-773-0030 *FAX: 886-2-773-7223*

Yow-Jyi Chen
Director, Model Shop, Telecommunications Laboratories
P.O. Box 71, Chungli, Taiwan, ROC
PHO: 886-3-424-4540 *FAX: 886-3-490-4004*

Y.S. Lin
Manager, Marketing, AT&T Taiwan Telecommunications
6F, Overseas Trust Bldg., 249 Sec.1 Tun Hwa S. Rd., Taipei, Taiwan, ROC
PHO: 886-2-776-7261 *FAX: 886-2-751-5714*

Y.T. Yu
American Express Bank Ltd.
5F, 214 Tun Hwa N. Rd., Taipei, Taiwan, ROC
PHO: 886-2-714-9448 *FAX: 886-2-714-9488*

Yuan-Hsiung Lye
Managing Director, Telecommunication Training Institute-Taichung Center
658 Section 2, Li-Ming Road, Taichung, Taiwan, ROC
PHO: 886-4-288-3500 *FAX: 886-4-288-3520*

Yu-Chwin Lin
Managing Director, NYNEX Network System Company
Grand Hyatt Taipei, 2 Sung Shou Rd., Taipei, Taiwan, ROC
PHO: 886-2-720-1234 EXT: 1417 FAX: 886-2-722-5240

Yu-Min Hsiao
Manager, Kuan Yue Electric Co., Ltd.
9F, 162, Sec.2, Chang An E. Rd, Taipei, Taiwan, ROC
PHO: 886-2-776-3200 *FAX: 886-2-721-1347*

Yung-An Lee
Director, Traffic Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-3100 *FAX: 886-2-394-5004*

Yun-Huei Peng
Engineer, Outside Plant Department, Northern Taiwan Telecommunications Administration
42 Jenai Rd., Sec.1, Taipei, Taiwan, ROC
PHO: 886-2-344-2195 *FAX: 886-2-396-3344*

Yun-Lan Chou
Executive Director, Taiwan Telecommunication Engineering Industry Association
8F-3, 115, Sec.1, Hong Chou S. Rd., Taipei, Taiwan, ROC
PHO: 886-2-397-2828 EXT: 779 FAX: 886-2-392-3685

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Global Trends-Restructuring, Privatization, Finance, Investment:

Worldwide Trends towards Liberalizing the Wireless Segment of Telecommunications

Michael Chow
Asia Region, BellSouth International(Asia/Pacific), Inc., Hong Kong

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

Remarks prepared for Michael Chow
For delivery to Pacific Telecommunications Council
Worldwide Trends towards Liberalizing Wireless Segment of Telecommunications
Taipei, Taiwan
June 10, 1993

Good morning. It's a pleasure to be invited to speak by the PTC at this seminar. From the looks of the audience, I'd guess it wouldn't be a surprise to learn that Asia is one of the fastest-growing regions in the world.

The Asia-Pacific region is characterized by countries that are greatly benefiting from the trend of many governments to move towards economies that are more liberalized, more open, and based more on the principles of the free market. I want to talk to you today about one important part of that liberalization trend, and that is the growing tendency for liberalizing the wireless segment of telecommunications.

First, let's define what we mean by wireless communications. Wireless communications today encompasses three kinds of services: paging, CT2 telepoint, and cellular telephony.

Let me quickly talk about CT2 & paging in passing. CT2 or telepoint mobile phone service, which didn't quite catch on in Europe and is still being studied in the U.S., seems to be having some success in Asia-Pacific. According to research, there are about 76,000 of these handsets in the region, almost 40,000 of them in Hong Kong. Projections over the next ten years call for more than 2.3 million subscribers to this type of mobile service, however market acceptance is still questionable.

The market for paging service in Asia-Pacific is still very robust. In the ten largest markets combined, there are more than 12 million paging subscribers now, with projections that this total will grow to more than 25 million users in 10 years. The largest portion of paging subscribers, as in cellular, can be found in Japan.

I'd like to focus on cellular as the predominant wireless service because, unlike paging and CT2, it is true, two-way communication. Cellular is also experiencing the strongest growth of all the wireless services. What general trends, then, are developing in the cellular industry? For one thing, we are seeing a conversion from analog technology to digital technology.

The larger markets are running out of channel capacity on their analog systems. Digital systems can offer anywhere from three times to ten or fifteen times the capacity of an analog system.

But digital conversion affects more than just capacity. It also means better transmission quality, additional capabilities, capital cost reductions, increased fraud protection and privacy. That is why you are seeing more systems convert to digital.

There is also more competition in the various markets. Cellular is no longer the exclusive domain of a country's PTT. Second licenses have been issued in most markets, and some governments have issued third, fourth and fifth licenses. Australia just issued its third national cellular license. Hong Kong has issued five licenses. Competition is clearly the trend here, and it is interesting to note that Taiwan remains as one of the few political entities with just one cellular system in operation.

A corollary of the licensing trend is that private operators are now being allowed to own and operate cellular networks. Telecommunications, particularly the wireless variety, is not just a government service anymore. Free market capitalists are being allowed to enter the business.

What is causing these changes in the wireless industry? Demand is one of the biggest drivers. People want cellular service, and systems are being developed to meet this demand.

Another factor is the benefits that accrue to the customer. Subscribers are asking for choice in their services, for more services, for better quality services for services at a lower price. Competition and liberalization are the best way to bring these benefits to the customers.

Wireless liberalization is also another source of revenue for hard-pressed governments that need the funding to upgrade their infrastructure. Auctioning off cellular licenses or portions of the spectrum is a quick way to raise revenues and bring private capital into a country.

The development of cellular systems can help a government bring telecommunications service to all parts of the country. Cellular complements the wireline system, and in many cases can provide service to rural areas where it is not financially feasible to extend the wireline facilities.

Satellite services are also emerging. In Australia, Optus Communications will soon be rolling out Mobilesat service, which will use satellites to provide wireless communications coverage of the immense rural and desert areas in the heart of the continent. Optus will be one of the first companies in the world to provide national coverage of this type via satellite, so it will be very interesting to see how the market for that develops.

Commercial factors are also pushing the liberalization of wireless service. People are willing to invest in cellular because it offers a faster, better rate of return on their money.

Wireless systems have been built and are being operated in both mature and developing markets. Our experience has taught us that mobile communications has a valuable role to play in any type of market. For mature economies, it complements wireline service, providing mobility and versatility to support the rapid pace of business activity and busy lifestyles. Fore developing markets, cellular often provides basic communications infrastructure. And, it can extend the reach of telecommunications to people and places which never have had service before.

The Asia Pacific region is a blend of both types of markets, and across this region, we see wireless playing its full range of roles. In the next few minutes, I'll focus on both types of markets -- mature and developing markets, and talk about how the trend towards liberalizing wireless communications could affect them.

According to the Economist magazine, at least eight countries in Asia - Pacific region are expected to grow at a rate of about 7 percent a year throughout the '90's -- which means their economies would double in size in ten years. I am sure that you know those nations are China, Hong Kong, Indonesia, Malaysia, Singapore, South Korea, Taiwan, and Thailand. In fact, the growth rate here is expected to be twice that of North America, and 50 percent greater than the European Community.

Not surprisingly, sustained high economic growth in a developing country can quickly overwhelm the telecoms infrastructure, and continued growth may be impeded if telecom development lags. This fact has not escaped the attention of the leaders in those developing countries. In every case, telecoms infrastructure development has been given a high priority.

Cellular and wireless communications are squarely in the middle of this infrastructure growth, and are growing faster in the Asia-Pacific region today than any other region in the world. The latest numbers from CIT research indicate that the Asia-Pacific nations combined, had just under four million cellular subscribers at the start of this year, but are projected to have more than 23 million subscribers by the year 2002.

In its survey of the 10 largest economies in this region, CIT research predicted that the combined market for mobile communications will grow from $11.5 billion (U.S. dollars) in 1992 to $27 billion in 2002. Cellular service revenues alone are projected to grow from less than $6 billion to more than $15 billion during that same period.

That's a staggering growth rate, and there are four reasons for it: ubiquity of coverage, speed of development, cost, and reliability. A high - quality cellular system can become operational, from scratch, in a few months, rather than the years it takes to install comparable wireline capacity. And the amount of investment required per subscriber is becoming competitive to fixed networks, depending on the density of subscribers and traffic usage.

In the more mature economies of Asia-Pacific, there is a definite trend towards privatization of the state - owned telecoms enterprises and the introduction of competition, usually lead by the licensing of second and third cellular networks. Private ownership of cellular, in whole or in part, is now a fact of life in these nations. For example, New Zealand has sold its national telephone company to private interests and issued a cellular license to another private company. The private ownership pattern is evident in some developing countries as well, such as Indonesia, the Philippines, and Malaysia.

Competition also is a growing trend. There was a time, not so long ago, when the idea of telecoms competition in many countries seemed improbable, if not impossible. But more and more government leaders are waking up to the benefits of healthy competition across most of the telecoms market segments. These benefits generally include more revenues for the government, more choices for consumers, and lower prices for service.

In the countries where multiple cellular operations have been licensed, all are doing well. We have seen that, rather than cannibalize each other, multiple systems tend to expand the market. Competition generally results in wider usage of the cellular systems.

And yet, we see that Taiwan still has only one cellular system in operation. Based on what we have seen in other countries, we can surmise that a real opportunity is being missed here. My feeling is that the introduction of competition into the Taiwanese market will speed up the spread of cellular usage among its citizens.

For the markets of Asia - Pacific that are open to outside involvement on fair and equitable terms, there will be no shortage of capable companies eager to participate, both financially and operationally. For these new entrants and the host countries, it is a win-win situation.

Many Asia-Pacific countries are still trying to tackle the issue of what technology and what standards should be adopted in their liberalization efforts. The reason? There are four major constituent groups with strong opinions on this subject.

First, the manufacturers certainly have a stake in what kind of technology and standards they'll offer their customers. If they don't have it, they can't offer it.

Second, the operators. Most of them line up behind a particular standard, and it usually depends on where their experience lies.

The third group, governments, usually dictate which standards is to be used; sometimes, this can be a subtle form of trade protection. And the next few years will be most interesting as several standards go head-to-head in Asia. Europe will be GSM-based. North America will migrate either to CDMA or TDMA, or both.

Asia has an interesting mix of all European, North American and Japanese standards. What will eventually dominate the region as a de facto cellular standard, I do not know. But I do know that the fourth constituent group, which seems to be the most important, are the customers. They do vote with their wallets, and they should have a lot to say about what the prevailing standard will be.

Standards are important to the Asia-Pacific region, because the lack of a consistent standard can impede its growth potential. Fragmented standards will dilute pan-regional and international use of a service. This will be of critical importance to the consumer in the next five to ten years.

As I mentioned, the cellular subscriber in Asia-Pacific is projected to grow from four million to more than twenty-three million by 2002. In fact, by the middle of this decade, it is expected that almost a quarter of all cellular subscribers in the world will reside in the Asia-Pacific region -- which is up from 10 percent of the world total in 1986.

The market fundaments are strong -- there are robust economies in the region which need better and expanded communications services to maintain their high growth rates. The trends are favorable -- new technology makes it easier to leapfrog the installed landline networks and bring wireless telecom service to areas where previously it was not feasible to provide it. Most importantly, more countries are moving toward privatization and competition in wireless and other forms of telecommunications services.

Those countries that continue to upgrade their communications infrastructure -- and attract outside investment, technology, and expertise -- will be the countries whose economies stand to benefit the most. I believe liberalization is the quickest and most effective way to go about this, and it's obvious that more and more governments are recognizing this. Liberalization will be a trend that all of us -- particularly consumers -- can benefit from.

When I look into the future of telecommunications in the Asia-Pacific region, I see a wireless future -- not just in voice telephony, but in wireless mobile data communications as well. Wireless will extend the reach of telecommunications to people who previously could not enjoy it. It will bring more benefits to consumers, and enable them to stay in contact with each other. In the final analysis, that is the most positive trend of all.

Thank you very much

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Global Trends-Restructuring, Privatization, Finance, Investment:

Joint Ventures and Strategic Alliances

Christopher M. Harland
Group Head Telecoms, Morgan Stanley, USA

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

Joint Ventures and Strategic Alliances

Christopher M. Harland
Executive Director

MORGAN STANLEY
TELECOM
G R O U P

Joint Ventures and Strategic Alliances

- Review of Recent Activity
- Rationale for Strategic Investments and Joint Ventures
- Key Structural Considerations
- Future Outlook

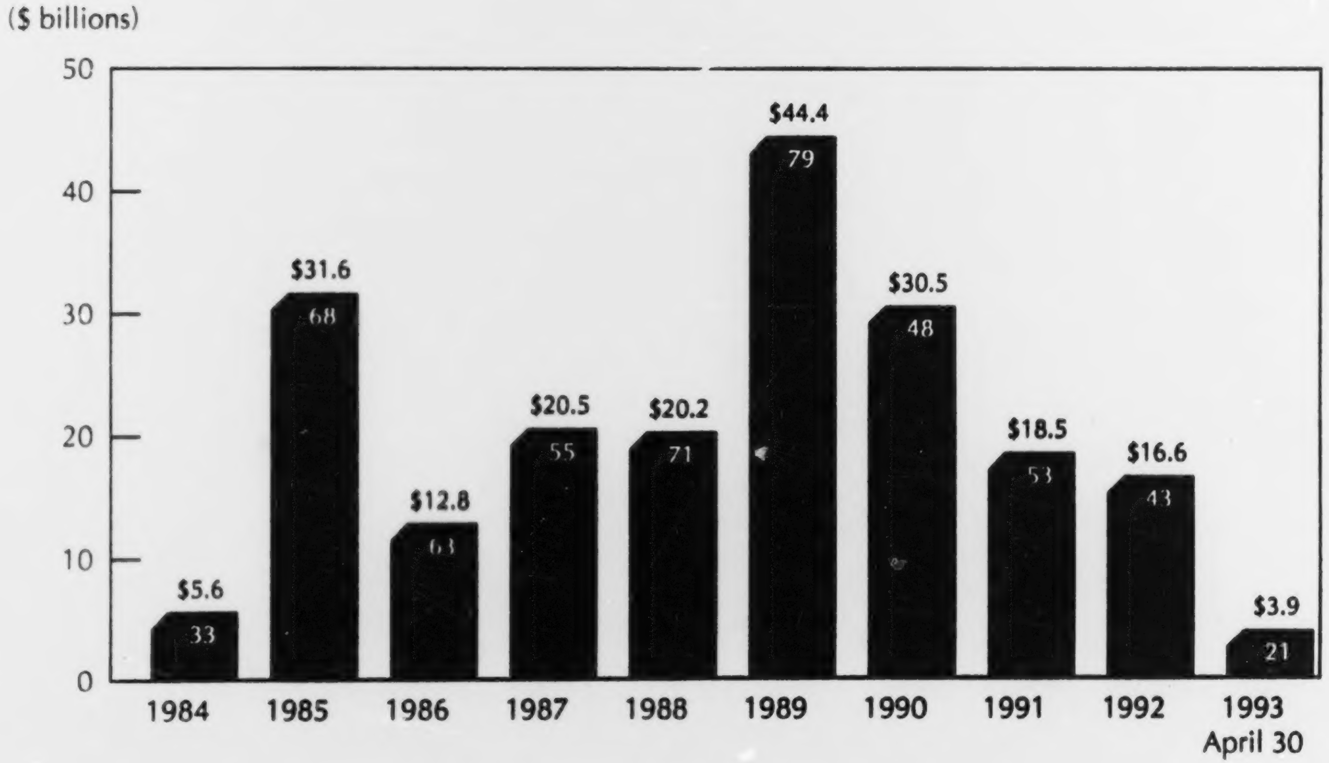
Joint Ventures and Strategic Alliances

Review of Recent Activity

- Telecom has been among the most active industries embracing strategic alliances and joint ventures
- Trends driving this activity include:
  - Privatization
  - New Technologies
  - Convergence
  - Globalization
  - Competition
  - Need for capital
- During the 1980s geographic focus of telecom investment was the U.S., Latin America and Europe
- Sectors where projects were focused included wireless and landline privatizations
- Today we are increasingly seeing geographic focus shift to Non-Japan Asia
- Future project opportunities likely to be concentrated in wireless, competitive networks and build out projects

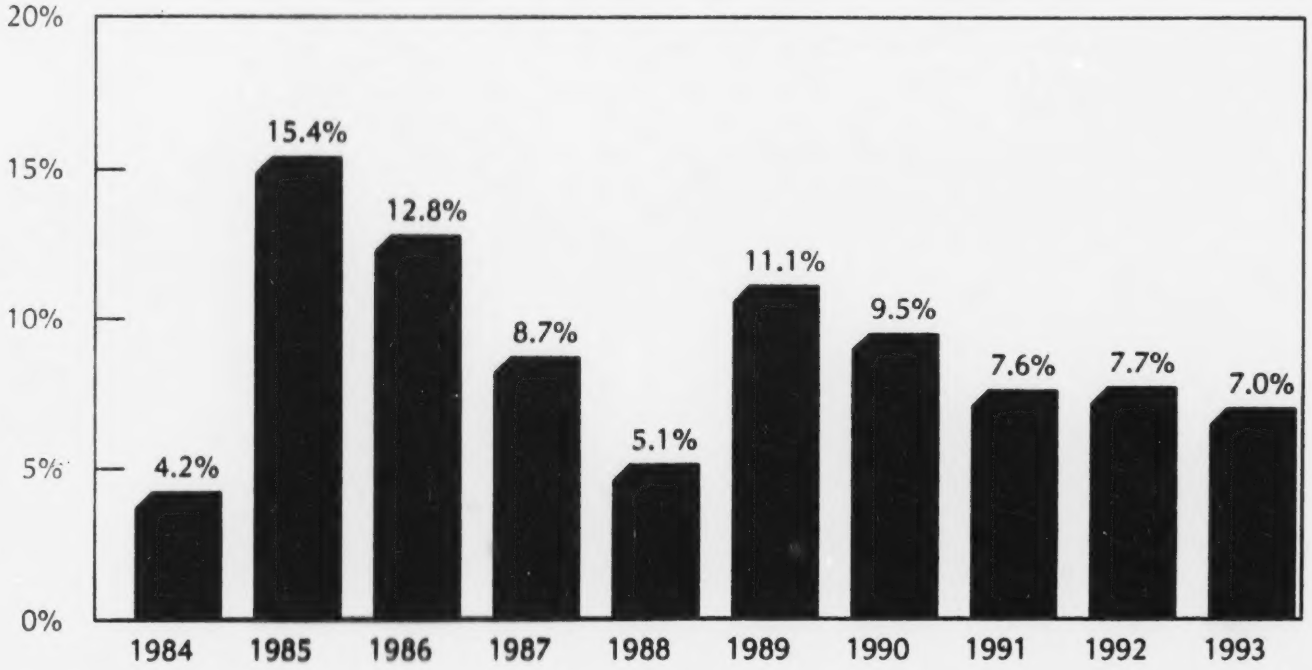
Joint Ventures and Strategic Alliances

Telecommunications M&A Transactions



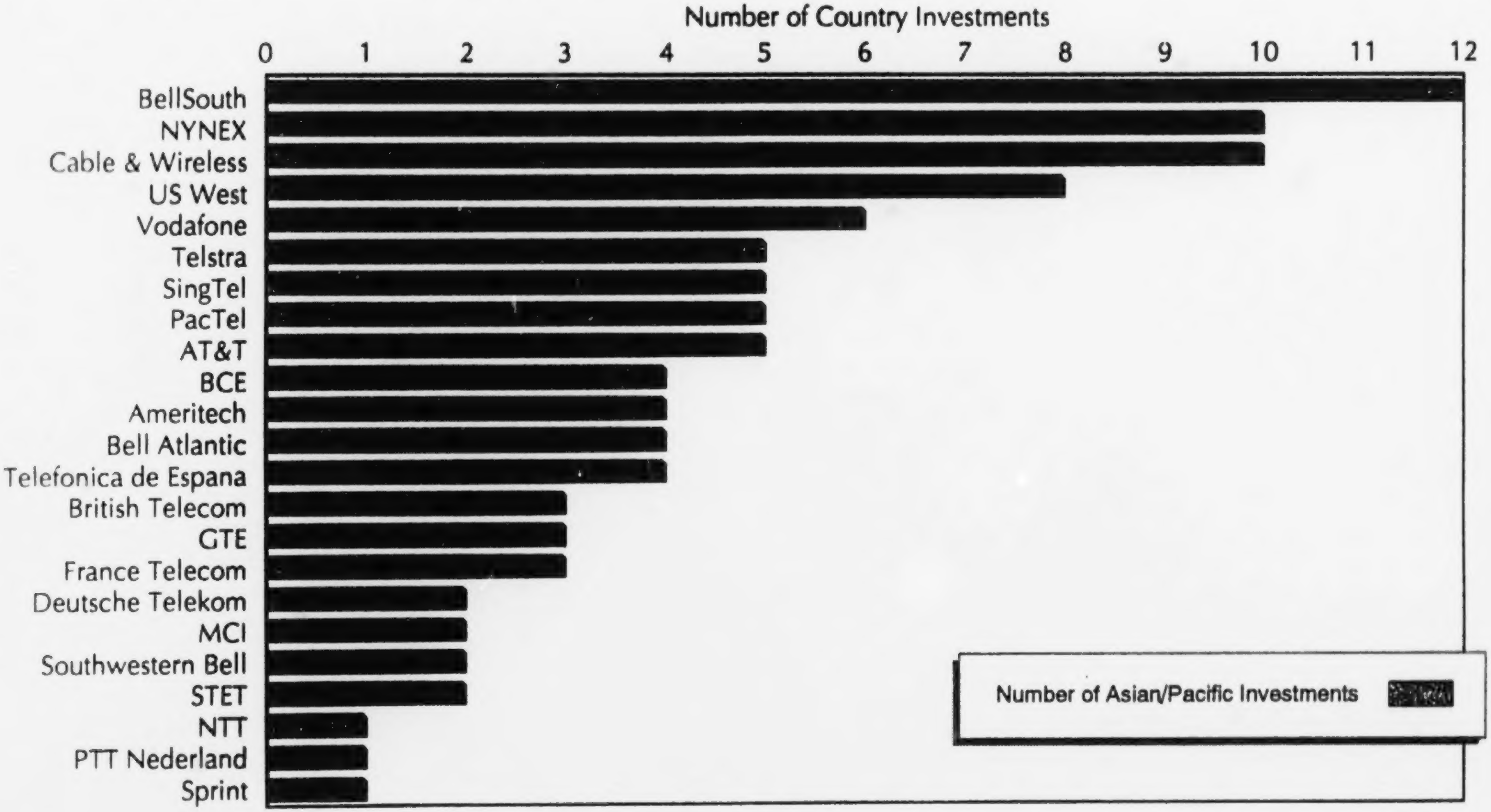
Joint Ventures and Strategic Alliances

Telecom M&A Transactions as a % of Total M&A Transactions



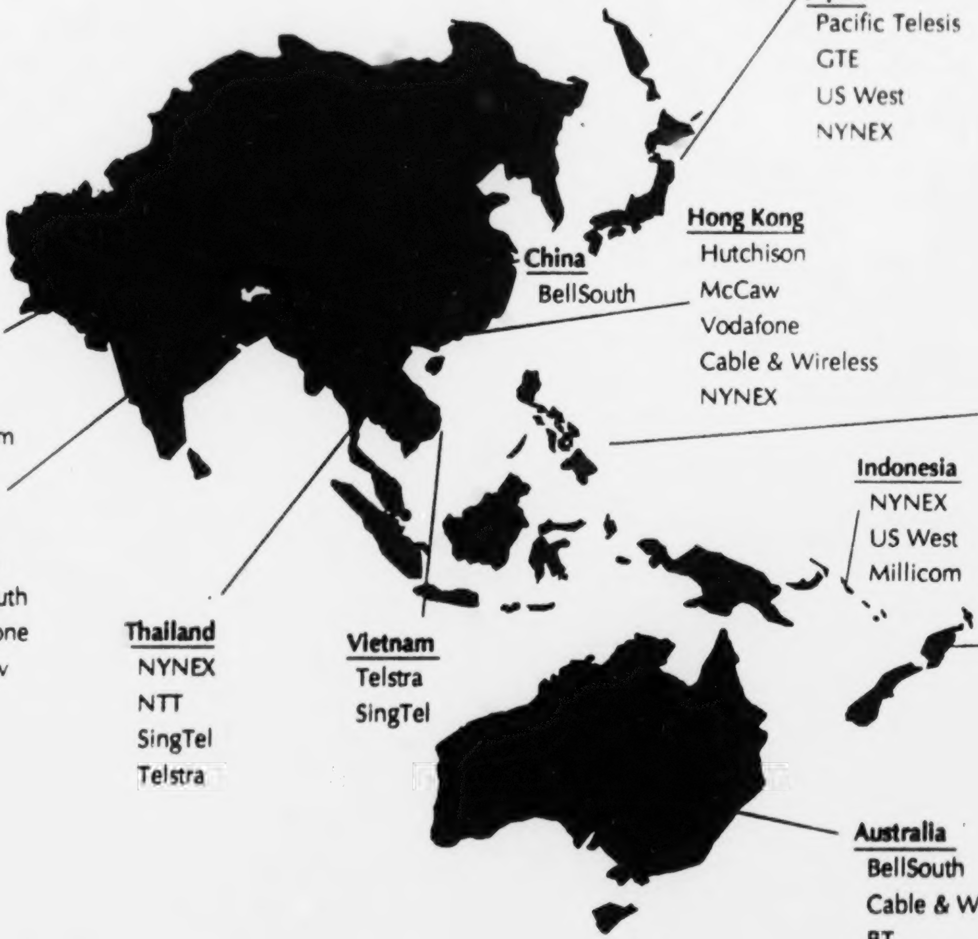
Joint Ventures and Strategic Alliances

Cross-Border Telecom Strategic Investors



Joint Ventures and Strategic Alliances

Cross-Border Telecom Investments in Asia/Pacific Region: Geographic Overview



Japan
Pacific Telesis
GTE
US West
NYNEX

China
BellSouth

Hong Kong
Hutchison
McCaw
Vodafone
Cable & Wireless
NYNEX

Pakistan
Telstra
C&W
Millicom

India
BCE
Telstra
BellSouth
Vodafone
McCaw

Philippines
NYNEX
Cable & Wireless
Telstra
SingTel

Indonesia
NYNEX
US West
Millicom

Thailand
NYNEX
NTT
SingTel
Telstra

Vietnam
Telstra
SingTel

New Zealand
Ameritech
Bell Atlantic
BellSouth
MCI
BCE

Australia
BellSouth
Cable & Wireless
BT
Vodafone

Joint Ventures and Strategic Alliances

Cross-Border Telecom Investments in Asia/Pacific Region: Sectoral Overview

	Wireless	Local Exchange/Cable	Long Distance
Japan	PacTel, NYNEX, GTE, US West		
Thailand	SingTel	NYNEX, NTT, Telstra	
China		BellSouth	
Hong Kong	McCaw, C&W, Vodafone	C&W, NYNEX	C&W
Indonesia		NYNEX	
Philippines	SingTel, Millicom	NYNEX, C&W, Telstra, US West	C&W, Telstra
New Zealand	Ameritech, Bell Atlantic, BellSouth	Ameritech, Bell Atlantic	MCI, BCE, Ameritech, Bell Atlantic
Australia	BellSouth, Vodafone, C&W	BellSouth, C&W	BellSouth, C&W, BT
Vietnam	SingTel	Telstra	
Pakistan	Millicom, C&W		Telstra
India	BCE, Telstra, BellSouth, Vodafone,McCaw		
Cambodia	Telstra		

Rationale for Joint Ventures and Strategic Alliances

Buyers Perspective

- Leverage core competencies
- Declining growth prospects of home market
- Attractive investment opportunities
- Obtain local market presence and expertise
- Share capital risk
- More efficient utilization of excess manpower

Rationale for Joint Ventures and Strategic Alliances

Sellers Perspective

- Hasten development of a vital element of infrastructure
- Access key technologies
- Access capital both from the investor and the capital markets
- Share capital risk
- Source of operational and management expertise
- Increase leverage with equipment vendors

Joint Ventures and Strategic Alliances

Key Structural Considerations

- Assessment of core competencies
- Defining objectives
- Evaluation of strategic alternatives
- Universe of potential partners
- Valuation of assets
- Determination of appropriate process
- Determination of optimal structure
- Agreement on operation and governance arrangements
- Exit mechanism

Joint Ventures and Strategic Alliances

Future Outlook

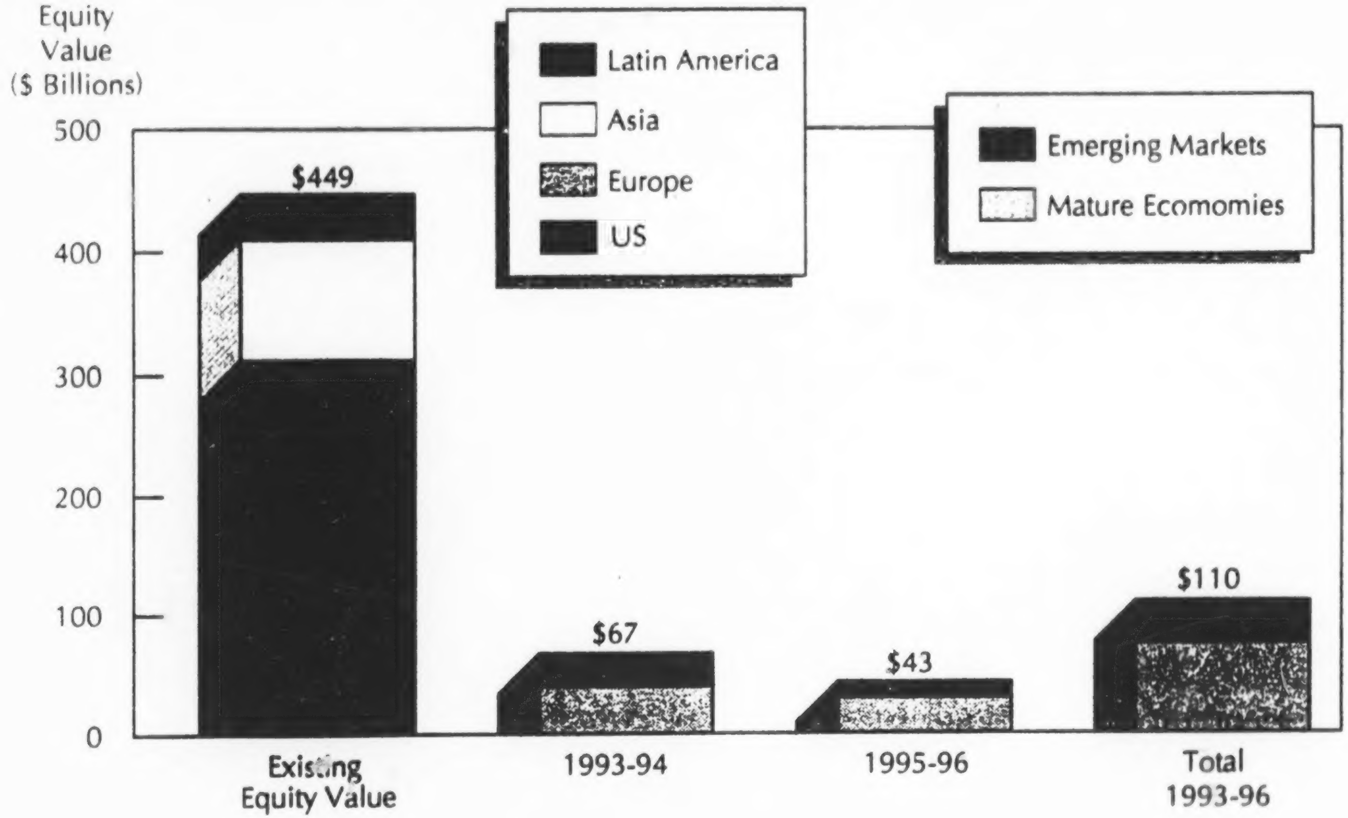
- Potentially over 30 telecom companies will be privatized over the next three years
  - An unprecedented number of sectoral privatizations in such a compressed timescale
  - Estimated demand for equity capital of up to $100 billion
  - Most will not be fully privatized

- Competition for scarce capital will be an issue
  - Significant financing will be required more broadly by industry participants in order to expand and upgrade their networks, and to take advantage of new business opportunities
  - The telecom sector will also compete with upcoming finance, utility, and energy privatizations for investor attention

- Both financial and strategic investors will become more selective faced with:
  - Competing and increasing demands on their capital
  - Human resource constraints

Joint Ventures and Strategic Alliances

The Telecom Privatization Pipeline: By Equity Value(1)



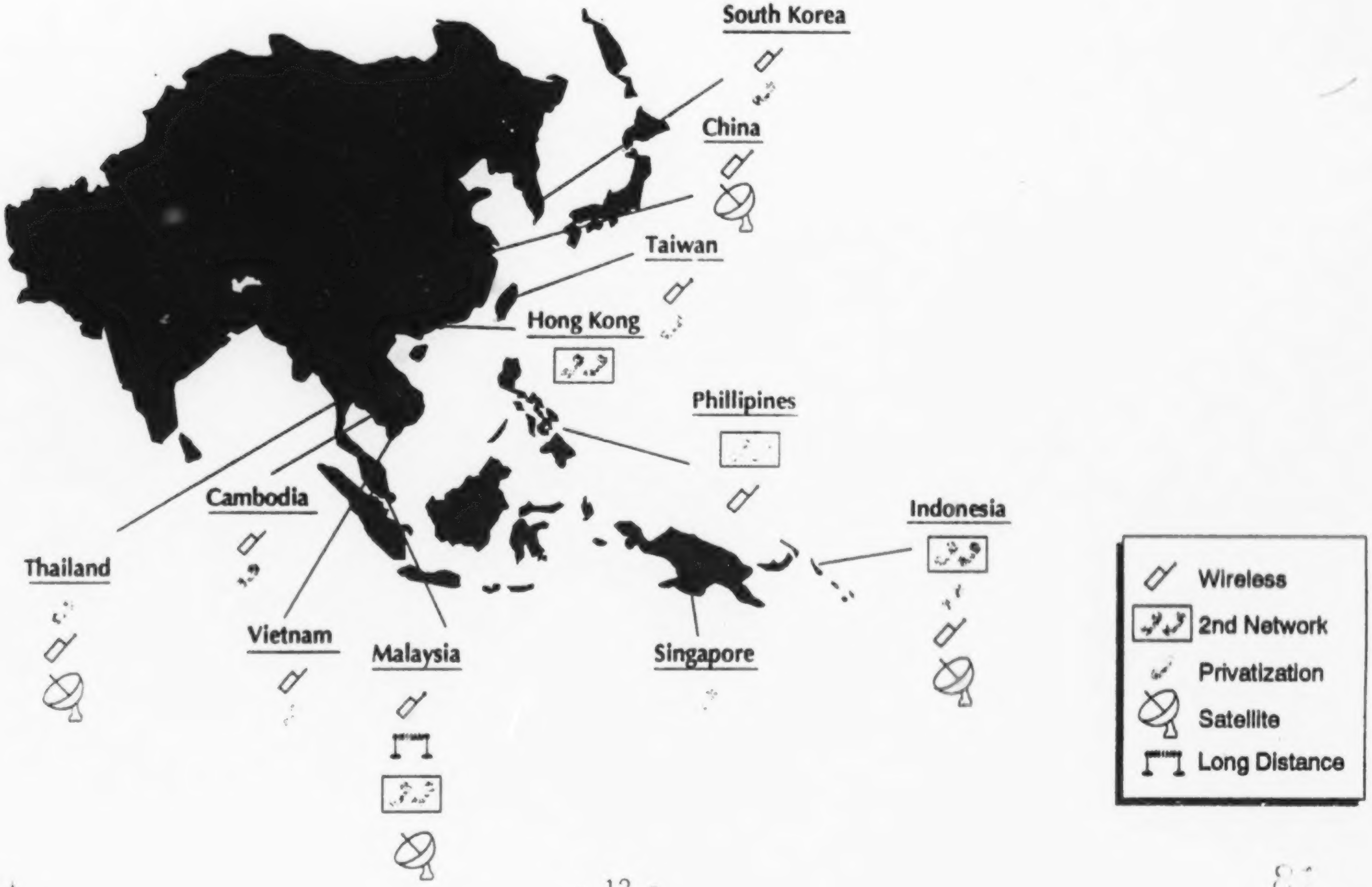
Notes: (1) Assuming 49% sale.
(2) Assuming an aggregate value of $2,000 per line in mature economies and $3,500 in emerging markets. Equity value is calculated by subtracting debt which is assumed to be 30%.

73

79

Joint Ventures and Strategic Alliances

Asian Pipeline


South Korea
China
Taiwan
Hong Kong
Phillipines
Indonesia
Cambodia
Thailand
Vietnam
Malaysia
Singapore
Wireless
2nd Network
Privatization
Satellite
Long Distance

Joint Ventures and Strategic Alliances

Conclusions

The financial markets remain enthusiastic and receptive to upcoming telecom opportunities. However, financial and strategic investors will be more discriminating.

- The near-term pipeline represents a substantial increase in capital demands on the financial markets
- The broad number and diversity of situations will compete for investor attention, with a higher proportion of mature economies than to date
- Reliance on international investors will increase, especially for upcoming emerging markets
- Cashflow strength, regulatory clarity, and market potential will remain key valuation factors
- Proper positioning within key investor criteria will be essential for success

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Panel Discussion: Overview of the Proposed Change

P.N. Wu
Directorate General of Telecommunications, ROC

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

OVERVIEW OF THE PROPOSED CHANGE

Technical

Pao-Nang Wu

Director

Technical Department

Directorate General of Telecommunications

June 1993

The world's telecommunication environment is changing so rapidly due to the growing new services requirement from customers and the fast technology development from the computer and telecommunication industry. Taiwan telecommunications industry has noway not to follow the trend.

This morning, preview of infrastructure of Taiwan's changing telecom landscape, and the overview of current regulation/policy have been just presented. Follow up that presentation, I would like to give you a brief note on the overview of the proposed changes on technical standardization and telecommunication terminal equipment type approval.

I Technical Standardization

1.1 Standardization Bodies and the Standards

Three Government bodies are involved in generating the Standards. They are the National Bureau of Standards, MOTC, and DGT.

(1) National Standards

In accordance with the Act of Standardization, ROC, National Standards, which deemed to be in conformity with for the entire nation, cover the areas of :

- Units : terms, definitions, symbols, and constants,
- Quality and Measurement standards,
- Standard method of testing,
- Safety standards, and
- Others

Ministry of Economic Affair (MOEA) shall be responsible for generating and publishing the National Standards, and the National Bureau of Standards is established for it.

There is now a National Standards Committee for Information and Telecommunications for performing of drafting related National Standards.

The standard procedures for generating National Standards is as follows:

- Requesting for standardization from the public,
- Agreed by National Bureau of Standards,
- Drafting by National Standards Committee,
- National Standards Council announce the draft for comments,

- National Standards Council finalizing the draft and submit it to MOEA for Approval,
- Being approved and announced by MOEA.

(2) **Transportation and Communication Standards**

The standards generated by MOTC are for the purpose of facilitating her affiliated administrations/organizations in planning, constructing, operating, and managing a construction project.

(3) **Telecommunications Technical Specifications**

The specifications formulated by DGT are for the purpose of unifying the technical specifications for the construction of the island-wide telecommunication network.

1.2 Possible Impacts by the Revised Telecom Law

As mentioned earlier by Mr. Lee, that the Draft of Revised Telecom Law will breakup the dual role of administrative supervision and business operation that DGT now stands, and a new DGT shall be established in order to supervise and assist Telecommunications Enterprises and administer Telecom Regulations. In the meantime, the MOTC shall establish a State-run Corporation, namely Chunghwa Telecommunications Corporation (CTC), to operate Telecom Enterprises. Therefore, it will clearly separate the supervisory right from the operational franchise when the Law is approved and set into force.

Furthermore, Article 33 of the Revised Telecom Act stated that telecommunication facilities provided by the Telecom Enterprises shall be in compliance with the Technical Standards constituted by DGT (the new one). The Technical Standards shall take the following requirements into consideration :

- failure or destruction of telecom facilities should never impair the providing of telecom service in whole,
- be able to maintain adequate quality of Telecom Services.

- not to impair or cause to impair the user or other telecom enterprises' telecom facilities which are interconnected with, or cause them to malfunction,

- clear boundary of responsibility between Telecom enterprises' facilities should be maintained.

Therefore, the new DGT shall also take responsibility of generating technical standards for their administrative purpose. In process, the procedures that the Act of Standardization stated would be taken into deep consideration. If necessary, the standards so generated would be proposed to the National Bureau of Standards for announcing as National Standards.

II Type Approval of Telecommunications Terminal Equipment

2.1 The Authority of Type Approval

According to the Telecommunications Act of The Republic of China, DGT, under the jurisdiction of MOTC, is a State-run telecommunications enterprises. And on MOTC's behalf, DGT is the authority for :

- formulating the Regulations for Type Approval of telecommunications terminal equipment,

- executing the type approval process, and

- issuing the Type Approval Certificate for telecommunications terminal equipment.

2.2 Existing Regulations for Type Approval

The regulations for type approval of telecommunications terminal equipment have been setup since the date of liberalization of customer premise equipment (CPE) at August 1, 1987. The existing Regulations formulated by DGT are as follows:

(1) Terminal equipment to be inter-connected with the public telephone switching network, such as : telephone set, cordless telephone, PABX and KTS, Fax terminal, etc.;

(2) Data terminal equipment for dial-up connections, packet-switched connections or dedicated connections (leased line service), such as : Modem, Concentrator, Multiplexer, PAD, etc.;

(3) Mobile-phone for Cellular Mobile Network; and

(4) Pagers for public radio paging system.

Each document for type approval of the equipment stated above, includes the description of the type approval process, requirements, and items needed to be tested and verified, as well as the technical standards. They are available in Chinese only and they can be purchased from DGT.

The Technical Standards for type approval is different from equipment to equipment. However, the relevant international technical standards have been followed to the possible extent, and it is clearly indicated in the document published by DGT. The criteria to be considered for type approval are mainly focused on the safety of and the connectivity to the public switching network. The function or performance of the terminal equipment is not the main criteria to be considered.

EMI standards has been established, but not yet being listed as one of the test items for type approval.

2.3 Test Laboratories

Telecommunication Laboratories (TL), under the jurisdiction of DGT, is responsible for telecommunications technology research and development, and she has a laboratory for performing the functional tests of telecommunications terminal equipment (including analog, digital, radio equipment, and field facilities), the EMI tests, the controlled environment tests, and the tests of electric characteristics of electronic parts.

The laboratory at TL is the only recognized laboratory by DGT to test most types of telecommunications terminal equipment for type approval. Presently, the manufacturers' own test results for their equipment, either local manufacturer or foreign manufacturer, are not accepted by DGT. And foreign-issued certificates, conformance test results, or reports of other tests performed in other countries are not accepted either at this moment.

The type approval certificate issued by DGT indicates the name of the manufacturer and the model number. However, it is to be noted that the application for the type approval must be submitted through a local agent or a locally established subsidiary.

2.4 Developing Process for Equipment Approval

If the principle amendment proposed on the new Telecommunications Law is granted, the following impact shall impose on the type approval of telecommunications terminal equipment :

(1) Type Approval of telecommunications terminal equipment will be in the hands of the new DGT, with an independent character among the telecommunications service providers, the equipment manufacturer, and the subscriber. That is, the new DGT will be the authority for formulating the Regulations for Type Approval of telecommunications terminal equipment, executing the type approval process, and issuing the Type Approval Certificate for telecommunications terminal equipment. And, new Regulations of Type Approval with different process can be expected.

(2) As a member of the international society, the relevant international technical standards will be followed to the greatest extent. When defining the Technical Standards, the new DGT will consider the following possible areas : (not necessary in the order of priority or the depth of concern)

a. National security;

b. Public welfare and social interest;

c. Safety of public telecommunications network;

d. Upgrading telecommunications services;

e. Open system architecture; and

f. Safety of user/operator.

(3) The new DGT shall recognize some qualified Test Laboratories to perform the tests required for telecommunications equipment approval. However, recognition process of qualified Test Laboratories is expected to be developed.

III. Conclusion

With the speedy development of computer and communication technology, and the fast growing international telecommunications network tighten up this world of information society more closely than ever. The national boundary of telecommunications service area is vanishing gradually, and the tendency toward globalization and liberalization in telecom community is spreading widely.

There is now a worldwide topic in telecom community, that international mutual recognition of type approval of telecommunications terminal equipment shall be adopted, and it would benefit to all the parties concerned in this world. DGT fully supports the concept. However, it is subject to negotiation between countries based on mutual-aid, mutual-benefit principles.

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Global Trends-Restructuring, Privatization, Finance, Investment:

Going All the Way - What its Like to be Un-Regulated

Anthony N. Briscoe
Telecom New Zealand International Ltd., New Zealand

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

ANTHONY BRISCOE TO PTC SEMINAR
TAIWAN
10 JUNE 1993

"GOING ALL THE WAY - WHAT IT'S LIKE TO BE UNREGULATED"

GOOD AFTERNOON, LADIES AND GENTLEMEN. I AM PLEASED TO TALK TO YOU DURING THIS CASE STUDY SESSION TODAY ABOUT THE NEW ZEALAND EXPERIENCE OF COMPETITION AND DEREGULATION. I THINK, AS MY TALK WILL SHOW, THAT OUR EXAMPLE CAN CERTAINLY BE DESCRIBED AS "GOING ALL THE WAY"!

I WOULD LIKE TODAY TO DESCRIBE NEW ZEALAND'S OPEN AND COMPETITIVE TELECOMMUNICATIONS MARKET. IT IS DESCRIBED AS THE WORLD'S MOST OPEN MARKET. AFTERALL, WHERE ELSE COULD A BODY THAT CAN MUSTER 12 CUSTOMERS AND US$4000 BECOME A FULLY-FLEDGED TELEPHONE COMPANY IN THE EYES OF THE GOVERNMENT!

I'D LIKE TO OUTLINE TODAY SOME OF THE MANY BENEFITS NEW ZEALAND HAS ALREADY ACHIEVED THROUGH THAT OPENNESS - PARTICULARLY HIGHER LEVELS OF EFFICIENCY AND QUALITY, MORE CUSTOMER CHOICE, AND INCREASED INVESTMENT.

I WOULD ALSO LIKE TO MAKE SOME COMMENTS ABOUT HOW COMPETITON AND OPEN MARKETS - AS OPPOSED TO REGULATION AND GOVERNMENT CONTROLS - IS THE BEST MEANS OF ENCOURAGING GREATER COOPERATION, UNDERSTANDING AND STRATEGIC PARTNERSHIPS AMONG NATIONS IN OUR REGION.

FIRST, SOME BACKGROUND.

IN JUST A HALF DOZEN YEARS IN NEW ZEALAND, WE HAVE MOVED FROM HAVING ONE GOVERNMENT OWNED, MONOPOLY TELEPHONE COMPANY - TO A TELECOMMUNICATIONS INDUSTRY WHICH IS VERY COMPETITIVE - AND MORE MARKET DRIVEN THAN EVER.

OVERHEAD ONE

JUST SIX YEARS AGO, TELECOM WAS PART OF A GOVERNMENT DEPARTMENT; THE POST OFFICE. APPROXIMATELY 26,000 PEOPLE WERE EMPLOYED IN PROVIDING A RANGE OF TELECOMMUNICATIONS SERVICES TO THE PEOPLE OF NEW ZEALAND.

AT THAT TIME, THE POST OFFICE HAD A TOTAL MONOPOLY ON ALMOST EVERY ASPECT OF TELECOMMUNICATIONS IN THE COUNTRY. THERE WAS NO "TELECOMMUNICATIONS INDUSTRY" - THE INDUSTRY WAS TELECOM.

THIS MONOPOLY INCLUDED NOT ONLY SERVICE - BUT TELEPHONE HANDSETS AND BUSINESS SYSTEMS. NOTHING COULD BE CONNECTED TO THE NETWORK WITHOUT THE POST OFFICE'S APPROVAL. THIS WAS RARELY GIVEN - EXCEPT IN ISOLATED INSTANCES SUCH AS THE EMERGING FACSIMILE MARKET.

AND HOW DID THE CUSTOMER FARE UNDER THIS GOVERNMENT SYSTEM?

TELEPHONES COULD TAKE WEEKS OR EVEN MONTHS TO INSTALL. TELEPHONE CIRCUITS BETWEEN MAJOR CENTRES - SUCH AS AUCKLAND AND WELLINGTON - WERE OFTEN OVERLOADED.

THE NETWORK WAS MANAGED THROUGH OUTDATED, OFTEN PAPER-BASED SYSTEMS, AND NETWORK MODERNISATION HAD ONLY BEGUN.

THE LABOUR GOVERNMENT OF THE DAY DECIDED THAT AN ENTERPRISE ECONOMY - BASED ON COMPETITION AND OPEN ENTRY - NEEDED TO BE ESTABLISHED IN ORDER TO MAKE THE NEW ZEALAND ECONOMY MORE COMPETITIVE, ATTRACT CAPITAL FOR INVESTMENT TO UPGRADE INDUSTRIES - AND ULTIMATELY GIVE CUSTOMERS MORE OPTIONS, AND BETTER PRICES.

THIS WAS ESPECIALLY TRUE IN TELECOMMUNICATIONS. MASSIVE INVESTMENTS WERE NEEDED TO UPGRADE AND MODERNISE TELECOM'S NETWORK.

MAJOR CHANGES IN TELECOM'S STRUCTURE WERE ALSO NEEDED TO IMPROVE SERVICE QUALITY, INCREASE EFFICIENCY, AND STIMULATE A CUSTOMER FOCUS IN THE COMPANY.

COMPETITION AND OPEN ENTRY INTO THE MARKET WERE SEEN AS THE BEST MEANS OF ENCOURAGING THESE CHANGES IN TELECOM.

OVERHEAD TWO (A&B)

TO DO THIS, THE GOVERNMENT FIRST CORPORATISED TELECOM - THEN LIBERALISED OR DEREGULATED THE MARKET - AND FINALLY PRIVATISED TELECOM.

THE GOVERNMENT'S COMPETITIVE FRAMEWORK WAS A VERY SIMPLE BUT EFFECTIVE ONE.

NO REGULATOR WAS NEEDED OR CREATED UNDER THIS FRAMEWORK. IT WAS FELT THAT THE THREAT OF ENTRY AT ANY TIME BY COMPETITORS - AND THE THREAT OF INTERVENTION BY GOVERNMENT IF

BEST COPY AVAILABLE

COMPETITION WAS IMPEDED BY DOMINANT COMPANIES - WOULD BE ENOUGH TO PROMOTE COMPETITION.

TELECOM AS A COMPANY, AND HOW WE INTERACTED IN THE BUSINESS COMMUNITY WAS, HOWEVER, GOVERNED BY THE SAME STATUTES THAT GOVERN OUR BUSINESS ACTIVITIES IN NEW ZEALAND, UNDER THE PROVISIONS OF THE COMMERCE ACT.

IT PROHIBITS BY LAW ANTI-COMPETITIVE ACTIVITIES - INCLUDING THE USE OF MARKET DOMINANCE FOR AN ANTI-COMPETITIVE PURPOSE.

TELECOM'S ROLE IN THIS PROCESS WAS OF COURSE VERY IMPORTANT.

AS THE PRINCIPAL TELECOMMUNICATIONS CARRIER IN THE COUNTRY, TELECOM AGREED TO PROMOTE COMPETITION, PRIMARILY THROUGH THE INTERCONNECTION OF ITS NETWORK WITH COMPETING COMPANIES. THIS INTERCONNECTION WAS TO BE ACHIEVED THROUGH COMMERCIAL MEANS - AT THE NEGOTIATING TABLE.

IT ALSO WORKED HARD TO PREPARE ITSELF FOR THE COMPETITIVE MARKET AND FOR PRIVATISATION.

MANY CHANGES IN THE COMPANY - OVER A VERY SHORT PERIOD OF TIME - WERE REQUIRED TO MAKE TELECOM AN ATTRACTIVE INVESTMENT - AND JUST AS IMPORTANT, A CUSTOMER FOCUSED COMPANY READY TO COMPETE IN THE MOST OPEN TELECOMMUNICATIONS MARKET IN THE WORLD.

OVERHEAD THREE

THE RESULTS CAN BE SUMMARISED AS SHOWN.

TELECOM BECAME MUCH MORE EFFICIENT - IN PART BY STREAMLINING STAFF - BUT ALSO BY INVESTING IN MODERN SYSTEMS AND TECHNOLOGY.

SOME $3.8 BILLION HAS BEEN INVESTED OVER THE LAST FEW YEARS IN OUR NETWORK - AND IN CREATING MODERN SERVICES SUCH AS CELLULAR AND OUR HIGHLY RELIABLE PAY-PHONE SYSTEM.

THAT NETWORK IS NOW AMONGST THE MOST MODERN IN THE WORLD - OVER NINETY-FIVE PERCENT OF OUR LINES ARE DIGITAL.

TELECOM IS TODAY OWNED BY 35,000 SHAREHOLDERS - SOME 32,000 OF WHOM ARE NEW ZEALANDERS.

THE COMPANY HAS BECOME MUCH MORE MARKET FOCUSED AND MORE SENSITIVE TO THE NEEDS OF ALL OF OUR STAKEHOLDERS - FROM CUSTOMERS TO SHAREHOLDERS.

THE IMPACT ON THE ECONOMY - ON CUSTOMERS, AND ON NEW ZEALAND'S COMPETITIVENESS - HAS BEEN AS DRAMATIC AS THE CHANGES IN TELECOM.

NEW ZEALAND CONSUMERS - AND THE NEW ZEALAND ECONOMY - HAVE RECEIVED SUBSTANTIAL BENEFITS BECAUSE OF THE GOVERNMENT'S COMPETITION POLICIES.

THE BENEFITS FALL INTO THREE CATEGORIES - MORE CHOICE, BETTER PRICES, AND HIGHER QUALITY SERVICE.

LOOKING AT CHOICE FIRST, COMPETITION HAS BECOME AN ESTABLISHED FACT IN NEW ZEALAND'S TELECOMMUNICATIONS MARKET, GIVING

BEST COPY AVAILABLE

CUSTOMERS MORE OPTIONS AND PROVIDERS FROM WHICH TO CHOOSE.

OVERHEAD FOUR (A)

TODAY, THERE ARE SOME 150 COMPANIES MARKETING EVERYTHING FROM TELEPHONE HANDSETS TO SPECIALISED NETWORKS SERVICES IN THIS COUNTRY.

THESE INCLUDE COMPANIES LIKE UBIX, XEROX, GDC, CARDINAL NETWORKS, PANASONIC, AND OTHERS.

MANUFACTURERS HAVE ALSO BEEN STIMULATED TO DEVELOP NEW PRODUCTS IN THE COMPETITIVE MARKET.

AND A TRULY COMPETITIVE AND DYNAMIC MARKET LIKE THIS ECOURAGES PARTNERSHIPS - WITH MORE INNOVATIVE WAYS TO WORK TOGETHER - THAN ONE IN WHICH GOVERNMENT HAS A STRONG PRESENCE.

FOR EXAMPLE, TELECOM HAS JOINED A NUMBER OF PARTNERSHIPS WITHIN NEW ZEALAND.

IT IS IN A CONSORTIUM - WITH UNISYS AND AZIMUTH - TO BID FOR NEW CONTRACTS TO AUTOMATE PUBLIC RECORDS HELD BY NEW ZEALAND GOVERNMENT AGENCIES.

IT IS ALSO IN PARTNERSHIP WITH A SMALL SOFTWARE COMPANY TO PRODUCE AN INNOVATIVE NEW SOFTWARE PACKAGE CALLED JETNET, WHICH CAN DRAMATICALLY INCREASE THE CAPACITY OF A NETWORKED PERSONAL COMPUTER SYSTEM - WITHOUT REQUIRING NEW HARDWARE TO BE PURCHASED.

TELECOM'S SKILLS AND PARTNERSHIP ABILITIES HAVE OPENED OPPORTUNITIES TO IT IN OTHER COUNTRIES, INCLUDING FIJI, THAILAND, WESTERN SAMOA AND THE COOK ISLANDS.

PAUSE

TELECOM IS ALSO CONTINUING TO WORK COOPERATIVELY IN ITS OWN COUNTRY TO PROMOTE THE GOVERNMENT'S COMPETITION POLICY.

IN THE TOLLS AREA, TELECOM HAS NEGOTIATED WITH A CONSORTIUM OF BELL CANADA, MCI, TELEVISION NEW ZEALAND, NEW ZEALAND RAILWAYS AND TODD CORPORATION ON A TOLL INTERCONNECT AGREEMENT.

THE CONSORTIUM NAMED ITS COMPANY CLEAR, AND IN ONLY EIGHTEEN MONTHS - FROM THE START OF NEGOTIATONS TO THE FINISH - CLEAR AND TELECOM REACHED AN INTERCONNECT AGREEMENT.

CLEAR HAS DONE REMARKABLY WELL IN THE NEW ZEALAND MARKET IN TERMS OF GROWTH OF MARKET SHARE - IN PART DUE TO THE MODERN NATURE OF TELECOM'S NETWORK, WHICH MADE INTERCONNECTION EASIER.

OVERHEAD FOUR (B)

AS THESE OVERHEADS SHOW, COMPETITION BETWEEN CLEAR AND TELECOM IS VIGOROUS - AND CLEAR IS PREPARING TO ENTER LOCAL COMPETITION AS WELL.

THERE ARE OTHER COMPANIES NOW COMPETING IN - OR ABOUT TO ENTER - THE TOLLS MARKET - INCLUDING TELEPACIFIC, A SUBSIDIARY OF ASB BANK, GLOBAL TELECOM SERVICES, SYNET - A NEW ZEALAND POST

SUBSIDIARY; AND INDEPENDENT TELECOM LIMITED IN AUCKLAND.

A HOST OF TELECOMMUNICATIONS CONSULTING FIRMS HAVE SPRUNG UP IN THE INDUSTRY TOO, TO HELP CUSTOMERS CHOOSE AND BETTER UTILISE THE WIDE RANGE OF OPTIONS AVAILABLE TO THEM.

IN OTHER MARKETS - INCLUDING CELLULAR AND EQUIPMENT SALES - TELECOM HAS ALSO WORKED TO PROMOTE COMPETITION. IN FACT THE GOVERNMENT HAS TENDERED FREQUENCY IN THE MARKET AND AS A RESULT THERE WILL BE TWO ADDITIONAL CELLULAR OPERATORS IN NEW ZEALAND - BELL SOUTH AND TELSTRA (FORMERLY AOTC).

PAUSE

NOW TURNING TO PRICES. THERE HAVE BEEN DRAMATIC IMPROVEMENTS IN THIS AREA AS A RESULT OF THE COMPETITIVE ENVIRONMENT.

TELECOM'S TOLL PRICES HAVE DROPPED BY SOME SIXTY PERCENT ON AVERAGE OVER THE LAST SIX YEARS. THEY HAVE DROPPED ANOTHER SIX PERCENT IN JUST THE LAST QUARTER ALONE.

OVERHEAD FIVE

AS THIS SLIDE SHOWS, THE OVERALL PRICE REDUCTION FOR A NATIONAL BASKET OF TELEPHONE CALLS - THE NUMBER AND TYPE OF CALLS TYPICALLY MADE BY NEW ZEALANDERS AS A WHOLE - HAS DROPPED SOME FOURTY-FOUR PERCENT IN REAL TERMS SINCE 1986.

PAUSE

FINALLY, THE QUALITY OF OUR SERVICE HAS ALSO DRAMATICALLY IMPROVED.

WE CAN NOW INSTALL TELEPHONE SERVICE - WHERE WE DO NOT HAVE TO REWIRE OR PUT IN NEW CABLING - WITHIN A DAY OR TWO OF A REQUEST IN MOST CASES.

AS AN ASIDE, ONE OF NEW ZEALAND'S PROMINENT BUSINESSMEN AND PERSONALITIES, SIR ROBERT JONES, RECENTLY REMARKED ABOUT TELECOM NEW ZEALAND IN HIS NEWSPAPER COLUMN. HE SAID:

"(DO YOU) RECALL THE LENGTHY DELAYS IN OBTAINING A TELEPHONE? TODAY YOU COULD CALL TELECOM AND ASK FOR SIX PHONES TO BE FIXED TO YOUR CEILING AND INSIST THE SERVICEMAN BE A 22-STONE LITHUANIAN WEARING A TUTU, AND THEY WOULD ASK WHAT COLOUR TUTU AND HAVE HIM THERE IN HALF AN HOUR."

BELIEVE ME, COMING FROM BOB JONES, THAT IS PRAISE INDEED!

IT PROBABLY RELATES TO THE FACT THAT WE NO LONGER HAVE PAPER BASED SYSTEMS FOR MANAGING OUR NETWORK, ALLOWING US TO GREATLY SIMPLIFY AND IMPROVE OUR SERVICE TO CUSTOMERS.

BECAUSE OF OUR MODERN, COMPUTERISED NETWORK MANAGEMENT SYSTEMS, RESIDENTIAL CUSTOMERS CAN TODAY SIMPLY DIAL 123 TO TAKE CARE OF MOST OF THEIR CONCERNS OR NEEDS. THAT INCLUDES EVERYTHING FROM A BILLING INQUIRY, TO A REQUEST FOR NEW SERVICE, TO A QUESTION ON HOW TO OPERATE A TELECOM SERVICE.

OVERHEAD SIX

OUR NETWORK RELIABILITY IS MUCH HIGHER TODAY AND IN AREAS SUCH AS OUR PAY-PHONES, WE HAVE DRAMATICALLY IMPROVED SERVICE. TODAY, OUR 4000 PAYPHONES ARE IN GOOD WORKING CONDITION 98 PERCENT OF THE TIME.

IN SUMMARY, CUSTOMER CHOICE, BETTER PRICES, AND HIGHER QUALITY HAVE ALL RESULTED FROM THE DECISION TO INTRODUCE COMPETITION INTO THE MARKET - AND ALLOW TELECOM TO OPERATE AS A PRIVATE COMPANY.

I HAVE GIVEN YOU A BRIEF SKETCH OF THE BENEFITS OF NEW ZEALAND'S COMPETITION POLICIES FOR THE ECONOMY, CONSUMERS AND MY COMPANY.

BUT HOW HAVE WE RESPONDED TO COMPETITION - AND THE INCREASINGLY SOPHISTICATED DEMANDS OF CONSUMERS?

FIRST, WE HAVE CONCENTRATED ON BECOMING EVER MORE EFFICIENT - TO SPEED AND IMPROVE CUSTOMER SERVICE, AND GIVE US MORE ABILITY TO RESPOND TO CUSTOMER PRICING DEMANDS.

OUR EFFICIENCY DRIVE - AND CONCENTRATION ON IMPROVING CUSTOMER SERVICE - LED TO OUR ANNOUNCEMENTS IN FEBRUARY OF A MAJOR RESTRUCTURING OF OUR COMPANY.

OVERHEAD SEVEN

THE RESTRUCTURING HAS ALLOWED US TO BUILD OUR OPERATIONS AROUND THE CUSTOMER. WE NOW HAVE SPECIAL DIVISIONS FOCUSED ON SALES AND SERVICE IN THE KEY CUSTOMER SEGMENTS OF BUSINESS AND RESIDENTIAL SERVICES.

WE HAVE COLLAPSED OUR FOUR FULLY-OWNED SUBSIDIARY REGIONAL OPERATING COMPANIES INTO ONE NATIONAL STRUCTURE - GIVING US THE ABILITY TO MAKE OUR POLICIES UNIFORM, ALLOWING US TO ASSIGN NATIONWIDE ACCOUNTABILITY FOR CUSTOMER ISSUES TO ONE KEY MANAGER, AND ELIMINATING UNNECESSARY DUPLICATION OF FUNCTIONS THAT COULD SOMETIMES GET IN THE WAY OF CUSTOMER SERVICE.

SECOND, WE HAVE CONTINUED TO FOCUS HEAVILY ON QUALITY IMPROVEMENT. WE MEASURE CUSTOMER SATISFACTION EVERY MONTH THROUGH AN INDEPENDENTLY MANAGED SURVEY CALLED TELSATS.

THROUGH TELSATS, 3000 OF OUR CUSTOMERS, WHO HAVE RECENTLY EXPERIENCED OUR SERVICE ARE ASKED TO RATE IT ON A SCALE FROM "POOR" TO "EXCELLENT".

WE CONCENTRATE ON PUSHING THE "EXCELLENT" RATING EVER UPWARDS TO REACH A GOAL OF AT LEAST SIXTY PERCENT EXCELLENT - IN AREAS FROM BILLING TO SERVICE TECHNICIAN VISITS.

FINALLY, WE HAVE CONTINUED TO INTRODUCE NEW PRODUCTS AND SERVICES - AND BE AS INNOVATIVE AND RESPONSIVE TO OUR CUSTOMERS AS WE CAN.

OVERHEAD EIGHT (A&B)

THIS CHART SHOWS ONLY A FEW OF THE COMPETITIVE MOVES WE HAVE MADE. TO GIVE YOU A BROADER PERSPECTIVE OF THE MARKET PLACE, I HAVE INCLUDED IN THE CHART SOME OF TELECOM'S AND CLEAR'S MAJOR INITIATIVES.

THIS CHART SHOWS THAT WE ARE TRYING TO OFFER NOT ONLY BETTER PRICES - BUT MORE OPTIONS TO

CUSTOMERS SO THEY CAN TAILOR AND FIT SERVICES MORE CLOSELY TO THEIR NEEDS.

THE CHART DOES NOT SHOW OTHER MARKETING INITIATIVES WE ARE TAKING TO INCREASE THE VALUE OF OUR SERVICE.

FOR EXAMPLE, WE NOW OFFER A RANGE OF OPTIONS IN OUR 0800 SERVICE, INCLUDING SUCH THINGS AS AUTOMATICALLY ROUTING 0800 CALLS TO VARIOUS CUSTOMER LOCATIONS, AT VARIOUS TIMES IN ORDER TO MEET THE STAFFING REQUIREMENTS OF A CUSTOMER.

WE ALSO OFFER CUSTOMISED BILLING TO LARGER CUSTOMERS - SO THEY CAN TAILOR THE WAY THEIR BILL READS, WHAT IS INCLUDED ON EACH BILL, OR HOW THE BILL IS BROKEN DOWN AND PAID.

PAUSE

I HOPE I HAVE DEMONSTRATED TO YOU SOMETHING OF WHAT IT IS LIKE TO BE "UNREGULATED".

TELECOMMUNICATIONS IN NEW ZEALAND IS NOW A DYNAMIC, COMPETITIVE INDUSTRY, THAT IS INCREASINGLY FOCUSED ON CUSTOMER SERVICE - CUSTOMISING AND TAILORING SERVICES TO MEET INDIVIDUAL CUSTOMER NEEDS, PROVIDING MORE OPTIONS AND CONTINUING TO IMPROVE PRICES.

WE RECOGNISE WE STILL HAVE MUCH TO DO - ESPECIALLY NOW THAT WORLD CLASS COMPETITORS - IN THE FORM OF BELL SOUTH AND CLEAR THROUGH ITS SHAREHOLDERS MCI AND BELL CANADA - ARE ACTIVE IN THE MARKET PLACE.

WE HAVE HAD SOME "HICCUPS" ON THE WAY TO THAT COMPETITIVE MARKET. INTERCONECTION NEGOTIATIONS HAVE NOT BEEN EASY AND WE HAVE HAD OUR SHARE OF COURT DISPUTES. THERE HAVE EVEN BEEN SOME PLEAS BY A FEW COMPETITORS FOR "REGULATORY GUIDANCE" OR INTERVENTION .

BUT WE AT TELECOM STRONGLY FEEL THAT REGULATION AND REAL COMPETITION CANNOT CO-EXIST. AS A RECENT PAPER BY TWO PROMINENT PROFESSORS PREPARED FOR BELL CANADA, A MAJOR SHAREHOLDER IN CLEAR SAID OF REGULATION:

"RATHER THAN WINNING AND LOSING IN THE MARKETPLACE, ECONOMIC ACTORS WILL CONCENTRATE ON MOBILISING POLITICIANS AND PLAYING THE 'REGULATION GAME'. THE TELECOMMUNICATIONS MARKETPLACE WILL BE DISTINCTLY SECONDARY TO THE POLITICAL PROCESS".

I BELIEVE IT IS ALSO WORTH CONSIDERING HERE THAT THE WAY TO ENCOURAGE GREATER REGIONAL ECONOMIC GROWTH IS TO OPEN MARKETS AS COMPLETELY AS POSSIBLE, AND PROMOTE COMPETITION.

TRUE COOPERATION IN THE GLOBAL ECONOMY WILL COME WHERE THE INCENTIVES ARE GREATEST - AND THEY ARE GREATEST WHERE COMPANIES ARE GIVEN THE MOST FREEDOM TO OPERATE.

TRUE COMPETITON BASED ECONOMIES - WITH NO OVERBREARING "LEADERSHIP" OR INTERVENTION BY GOVERNMENT - PRODUCE MORE EFFICIENCY, MORE CHOICE, HIGHER QUALITY FOR CONSUMERS AND BUSINESSES, AND MORE INVESTMENT.

PAUSE

IN CONCLUSION, I WOULD LIKE TO LEAVE YOU WITH OUR STRONG VIEW THAT COMPETITION MUST CONTINUE TO BE PROMOTED AND ENCOURAGED.

WE BELIEVE NEW ZEALAND HAS GOT IT RIGHT AND HAS PROGRESSED FASTER IN CREATING A COMPETITIVE, DYNAMIC TELECOMMUNICATIONS MARKET THAN ANYWHERE ELSE IN THE WORLD.

THE MOVE TO COMPETITION TAKES SOME TIME, AND IT CAN TAKE STRONG POLITICAL WILL. BUT THE RESULTS ARE WORTH IT.

THANK YOU.

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Case Studies

Regulatory Environment for Telecommunications and Broadcasting in Australia and New Zealand

Gerald Moriarty
Broadcast Communication Limited, New Zealand

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

BIOGRAPHICAL DETAILS

GERALD E MORIARTY - MANAGING DIRECTOR - BCL

Mr Moriarty holds the position of Managing Director, BCL (a fully owned subsidiary of the Television New Zealand Group). He is also a Corporate Director of Television New Zealand Limited and a Director of Horizon Telecommunications and BCAL which are subsidiary companies of BCL in Australia.

Prior to joining BCL and the Television New Zealand Group in 1991, Mr Moriarty was the Assistant Managing Director of Australian Broadcasting Corporation.

He has extensive experience in both the broadcasting and telecommunication industries and particularly in the convergence of these industries.

He is a Fellow of the Institute of Radio and Electronic Engineers, a Fellow of The Institution of Engineers, Australia and a member of PTC.

B·C·L
BROADCAST COMMUNICATIONS LIMITED

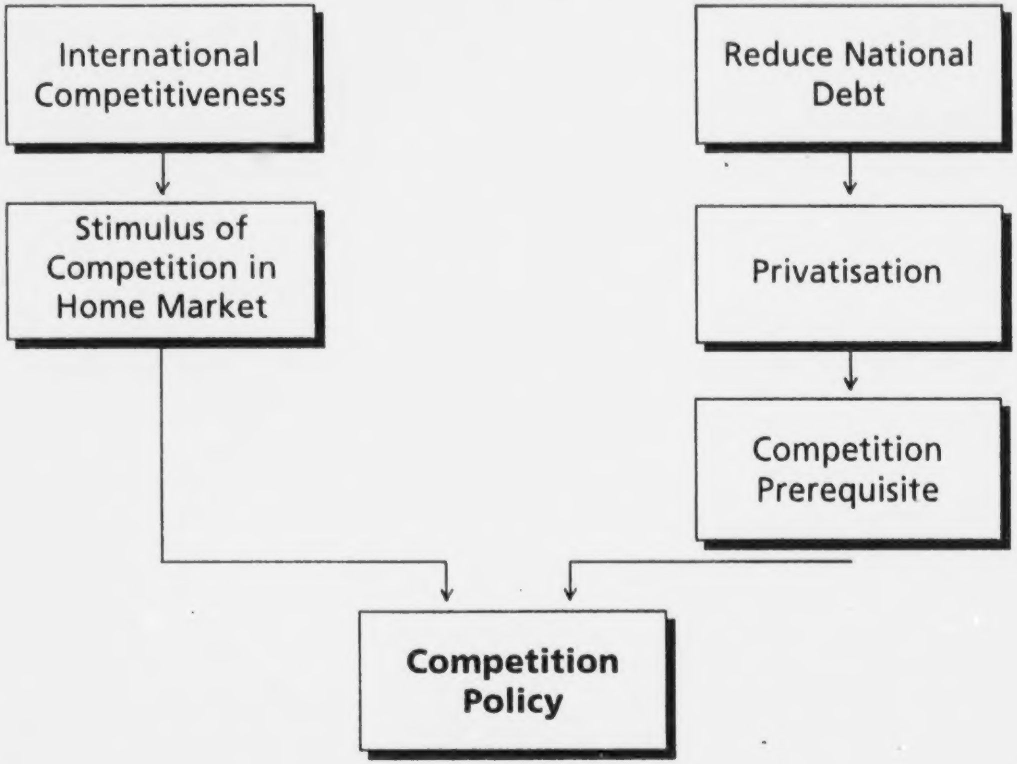
Communications Policy

Convergence or Divergence?

Gerry Moriarty, Managing Director, BCL

Presentation to PTC 10 June 1993

Policy Overview - New Zealand



International Competitiveness

Stimulus of Competition in Home Market

Reduce National Debt

Privatisation

Competition Prerequisite

Competition Policy

Policy Overview - New Zealand *(cont.)*

- Contestible markets in Telecommunications and Broadcasting

Threat of Competition as effective as actual competition

LIBERALISATION

Telecommunications:

- '87 - CPE, VAS
- '89 - Network Competition

Broadcasting:

- '87 - 3rd TV Channel
- '89 - New Broadcasting Act

Spectrum:

- Market-based allocation

BCL

Policy Overview - New Zealand *(cont.)*

To Regulate?

- "Slippery Slope"
- Distortions, inflexibility
- Multiplying effect
- Self perpetuation
- Cost

Or not to Regulate?

- Treat telecommunications and broadcasting like other industries
- Commerce Act to "deal with"
  - dominance
  - bottleneck issues
- Social issues - "kiwi share"
  - NZ On Air funding

OUTCOME

- Open entry markets
- Commerce Act
- Minimal Regulation

B·C·L

Policy Overview - Australia

Micro Economic Reform

↓

Telecommunications:

PRE'87
- CPE Competition
- Aussat Services

POST '88
- Services Competition - class licence
- Duolopy network competition
- Aussat privatisation
- 3rd mobile licence

1997
- Open market

Broadcasting:

- New Australian Broadcasting Authority
- Commercial radio opened up
- Narrowcasting - class licence
- Free to Air TV, Pay TV remain regulated

Spectrum:

- Mobile - part of licence
- Broadcasting - ABA contract
- Other - SMA

BCL

Telecommunications - N. Z. and Australia Compared

	New Zealand	***Australia***
Privatisation	● Telecom $4.25b	● Aussat ● AOTC - future?
Modernisation	● 90% plus digital	● 40% digital
New Market Entry	● Dominance - barrier ● Litigation under Commerce Act	● Tilted playing field - 2nd carrier ● Level playing field - class licence
Interconnect	● Telecom standard charges ***less*** AIC ● Appeal of judgement	● D.A.I.C.
Regulatory	● Effectively none ● Government loath to intervene	● Risks market distortions

BCL

Telecommunications - N. Z. and Australia Compared

	New Zealand	***Australia***
Long term outlook	● Limited competition?	● Austel
User "choice" in Network Services	● Only tolls competition	● Optus STD - 36% pop ● AAPT ● Mobile before year end
Prices (OECD Index)	● 90.6	● 100.9
Productivity *(1990 OECD output per employee index)*	● 1.0	● 1.1
Numbering Plan Management	● Telecom	● Austel
Cellular Spectrum	● Auction ● Litigation ● Delaying competition	● Part of carrier licencing

BCL

Broadcasting - N. Z. and Australia Compared

	New Zealand	**Australia**
Industry Development Arrangements	● None	● T.I.D.A.
Consumer choice	● 8 channels '93 ● 12 channels '96 ● Cable?	● 5 channels '93 ● 15 channels ? 94/95
Technology (new services)	● UHF (MDS-like) ● MDS ● Digital compression	● Satellite ● Digital compression
Social objectives	● "NZ On Air" funding ● 32% NZ programmes	● Programme quota ● 49% Aust programmes ● Govt. funded ABC & SBS

C.E.R.

National Treatment:

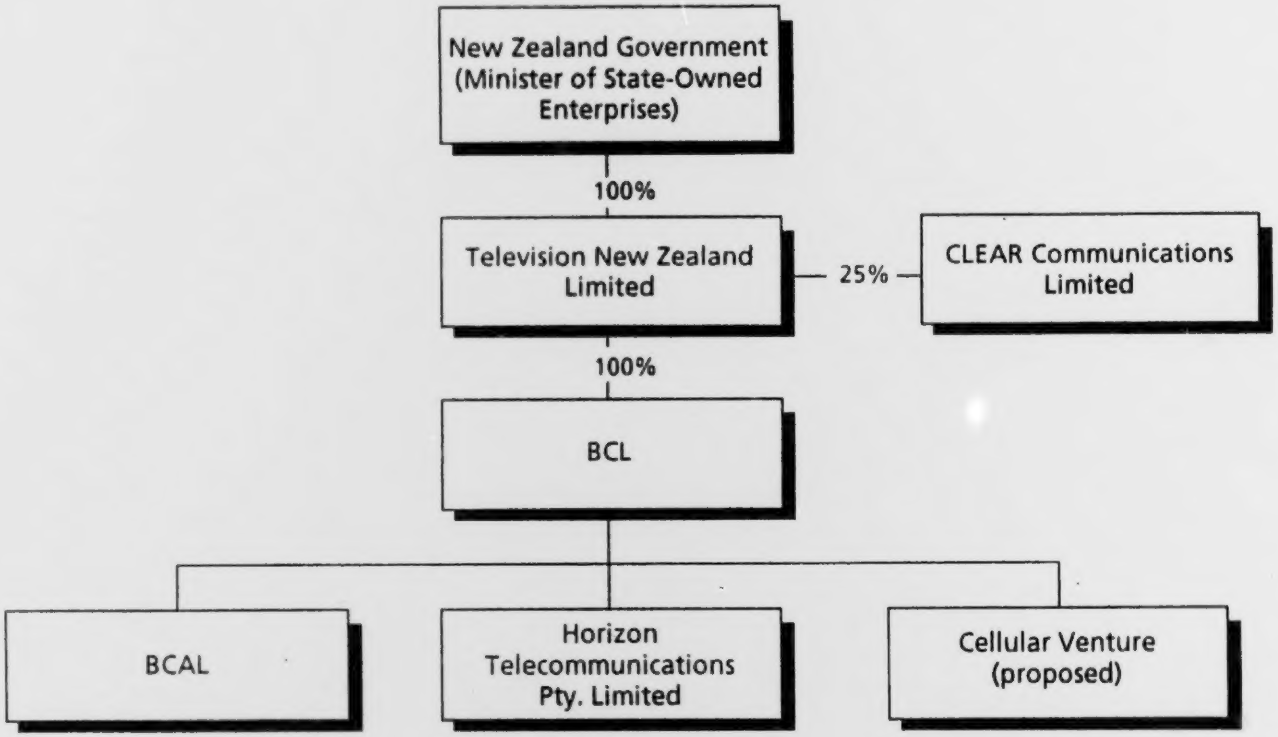
"each of the member states accords to persons of the other state, and to services provided by then, treatment which is no less favourable than that accorded to its own persons and the services they provide."

"Inscriptions"
N.Z.: - only restricts foreign shareholding in TCNZ
Aust: - reflect restrictions on market entry

Can only delete, can't add

BCL

BCL - Corporate Structure



New Zealand Government (Minister of State-Owned Enterprises)

100%

Television New Zealand Limited

25%

CLEAR Communications Limited

100%

BCL

BCAL

Horizon Telecommunications Pty. Limited

Cellular Venture (proposed)

BCL's Role

- Broadcasters deliver a message to their audience
- Telecommunications operators provide services to enable their customers to communicate and exchange messages.

BCL's role is to provide a medium to carry these messages on behalf of its customers.

BCL

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Case Studies

The Effects of Government Policies on Telecom Industry Developments

Nam-Jin Cho
Korea Telecom, Republic of Korea

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

The Effects of Government Policies on Telecom Industry Developments in Korea

PTC Mid Year Seminar
June 10, 1993
(14:00 - 16:30)
Taipei, Taiwan
R.O.C.

Korea Telecom

The Effects of Government Policies on Telecom Industry Developments in Korea

Nam-Jin Cho
Managing Director
Overseas Cooperation Department
External Cooperation Planning Group
Korea Telecom

June 1993

ABSTRACT

In Korea, government policies have played a key role in promoting the telecommunications service and equipment industry. The government telecommunications policies can be divided into three rather distinct phases. Up to 1982, from 1982 to 1990, and after 1990. Until 1982, the Korean government set policy objectives while simultaneously operating and maintaining the nationwide telecommunications network. However, the establishment of Korea Telecom in 1982 marked the first major turning point. Korea Telecom, a state-run corporation, became responsible for operation of the voice communications network. Data communications were left to DACOM which was established later in the same year. This separation was maintained until 1990, mainly because of technological reasons and the market situation in the nation. The year 1990 may be marked as yet another turning point when telecommunications laws underwent a major revision allowing limited duopolistic competition between Korea Telecom and DACOM.

This paper examines the policies of the Korean government and the impact on the Korean telecommunications market in each of the three periods. As a successful example of industry and market development in a short period of time, the Korean government policies are analyzed. Finally, the issue of future policy directions and challenges is briefly discussed at the end.

Ⅰ. Introduction

Korea has realized the massive expansion of its telecommunications network in recent years. The major contribution to this achievement came from the government policy of putting a very high priority on the telecommunications investments during the period, especially in the 80s. This paper attempts to analyze the evolution of the Korean technologies and telecommunications market characterized by the introduction of competition and liberalization, initiated by the government policies. It is expected that the implications thereof may well be taken into account in establishing and executing similar development programs for nations in the Asia-Pacific region and in preparing the strategies of advanced telecommunications operators seeking to participate in overseas markets.

Ⅱ. Telecommunications Operations by the Government (Prior to 1980) ---Monopoly of the Government

1. Background

After the Korean War, a series of 5-year Economic Development Plans were successfully established and carried out. The national economy boomed and the demand for telecommunications, to be more precise,telephone services,exploded. The telecommunications operation grew at almost the same pace,with the number of employees in the sector increasing from 15,151 to 67,217, and the size of the budget from 3,300 million won to 1,400 billion won, between 1962 and 1981. Government operation of the sector became more and more difficult with significant managerial problems.

2. Details of the Development

The first telecommunications service in Korea,in the form of telegraph, was provided in 1885 between Seoul and the neighboring port of Inchon. In 1920,the first long distance telephone service was offered between Seoul and Inchon. In 1935,automatic telephones were provided under Japanese rule(1910-1945) mainly for governing purposes. Afterwards, the Korean War destroyed most of the telecommunications network and reconstruction was not substantial until the 60s. The number of lines was a mere 100,000 with 89,000 subscribers by the end of 1960.

Along with the first 5-year Economic Development Plan which started in 1962, telecommunications investments were carried out on a longer-term basis. As a result of such investments, telex services became available in 1965, a microwave network was constructed in 1967, a satellite station opened in 1970, automatic long distance telephone services were provided between Seoul and Pusan in 1971, the first optical cable was laid in 1978,the first electronic switches were installed in 1979,and an analogue submarine cable connected Korea and Japan in 1980.

	unit	1961	1966	1971	1976	1978	1980	Growth (%)
Employees	person	15,151	27,314	42,893	61,110	63,365	67,217	444
Lines	thousand	123	313	624	1,389	1,997	2,835	2,204
Subscribers	thousand	97	278	555	1,271	1,879	27,705	2,685
Penetration ratio	per 100	-	-	1.7	3.5	5.1	7.1	

Table 1. Growth of the Telecommunications Operation (1961-80)

3. Major Problems

1) Aggravation of Telephone Shortage

The annual supply of telephones remained on the order of 50,000 in the 60s and 200,000 in the 70s, which fell far short of the demand as the economy was expanding. The backlog grew from 140,000 in 1976 to 600,000 in 1980.

2) Lower Service Quality

Along with the telephone shortage,the quality of service was unsatisfactory. In 1981, for example,the call completion ratio was 56% for local and 36% for long distance service. The noise and interference problem was serious as well. Nationwide automatic dialing was available for only 6% of a total of 4,767 long distance routes. To overcome these mounting problems,it was deemed essential to drastically increase the supply of telephone lines and complete nationwide automation.

3) Shortage of Rural Telephone Services

During this period,industrial parks were being built in and individual factories were being attracted to rural areas in order to promote balanced growth on a national scale. As the industrial structure changed,telephone demand in the rural areas rose rapidly. In 1981,switches in the rural areas were old-fashioned mechanical ones and transmission was mainly on open wires. The gap in the quality of the facilities between rural and urban areas was widening.

Ⅲ. Telecommunication Operation by Public Corporations (1982-1990)

---Public Monopoly by Sector

1. Background

Limited capabilities to draw necessary investment funds for the sector from government budgets,inflexible and slow responses to changing managerial environments,budget and accounting systems unable to promote required expertise in operating the telecommunications business,bureaucratic personnel management,and other difficulties began to surface. In an effort to remove or alleviate these difficulties,the policy and regulation function was separated from the operation of the network and provision of services. Management of the network and provision of telecommunications services were branched out to public operators by sectors,while a dedicated department in the government retained the policy and regulation function.

2. Designation of Operators by Sector

In 1982,Korea Telecommunication Authority(now,Korea Telecom) was established as a 100% government owned public corporation in order to overcome the pressing problems. Korea Telecom was to provide comprehensive telecommunications services except for data communications services which were left to DACOM which was established later that same year with public and private equity participation. This separation was aimed at promoting data communications in preparation for the coming information age.

The Ministry of Communications(MOC) moved even further,separating Korea Mobile Telecommunications Corporation(KMTC) from Korea Telecom in 1984 to provide paging and cellular services and Korea Port Telecommunications in 1985 to provide maritime communications services.

3. Increase in Telecommunications Investment

Starting from 1980,telecommunications investment increased dramatically for the massive supply of facilities. The proportion of the telecommunications investment in the total government investment more than doubled from below 3% in 1979 to over 7.0% in 1982.

The sourcing of the investment funds deserves some comments. First of all, the internal sourcing ratio steadily rose from 41% in 1982 to 76% in 1987. The external sources were comprised of debts in foreign denominations,telephone and telegraph bonds,installation charges,and others. The proportion of external sourcing fell to a mere 19 billion won in 1986, from a peak of 250 billion won in 1982. Foreign debts mainly financed digital exchanges imported from the U.S.,Belgium,and Sweden. In 1987,however,these investments began to be financed by internal sources.

Telephone and telegraph bonds and installation charges significantly contributed to the massive expansion and modernization of the Korean network. The issuance of the bonds stopped in January of 1988.

(Units : 100 million Won)

Year	Telecommunications Investments (A)	Total Government Investments (B)	A/B (%)
1979	2, 317	110, 913	2. 09
1980	5, 733	118, 357	4. 84
1981	8, 171	129, 310	6. 32
1982	10, 875	154, 865	7. 02
1983	10, 591	184, 796	5. 74
1984	13, 675	207, 950	6. 58
1985	15, 760	224, 363	7. 02
1986	16, 677	262, 457	6. 35
1987	15, 392	289, 210	5. 30

Table 2. Telecommunications Investment (1979-1987)

		'80	'81	'82	'83	'84	'85	'86	'87
Internal		48. 4	44. 9	44. 1	54. 7	66. 1	72. 1	73. 4	75. 9
External	Foreign debts	21. 9	20. 1	23. 0	15. 8	7. 9	3. 7	1. 2	-
	T & T bonds	13. 4	15. 8	11. 0	12. 9	11. 4	11. 9	12. 7	11. 2
	Installation Charges	16. 3	19. 2	13. 4	16. 6	14. 3	12. 1	12. 5	12. 1

Table 3. Investment Sourcing Ratios (%)

4. Major Results of the Policy

1) Complete Elimination of the Telephone Backlog

The annual supply of over one million telephone lines each and every year from 1982 raised the total number to 10 million by September of 1987, with the subscription demand shortage completely eliminated. In 1990, the number rose to 15 million. Accordingly, the number of telephone subscribers increased from 4 million in 1982 to 13 million in 1990. The penetration rate dramatically improved from 10.4 in 1982 to 31.0 per 100 inhabitants in 1990.

Year	'82	'83	'84	'85	'86	'87	'88	'89	'90	'92
Main lines (million)	4.5	5.3	6.3	7.5	8.9	10.2	11.2	13.4	15.3	19.0
Subscribers (million)	4.1	4.8	5.6	6.5	7.5	8.6	10.3	11.8	13.3	15.6
Penetration rate (per 100 people)	10.4	12.0	13.8	15.8	18.1	20.5	24.6	27.8	31.0	35.7

Table 4. Telephone Subscription (1982-1992)

2) Modernization of Facilities

In 1983, International Direct Dialing(IDD) services became available due to the introduction of digital exchanges for international telephone services. Further, in 1987, automatic subscriber dialing became available nationwide. Along with the quantitative growth during the period,qualitative improvements were also pursued. For example,87.6% of the exchanges and 35.7% of the outside plant facilities were converted to digital by 1990. Rural telecommunications services drastically improved during the period with a benchmark established in 1987 to accommodate all remote villages with 10 or more households and islands with 50 or more households.

Year	'82	'83	'84	'85	'86	'87	'88	'89	'90	'92
Automation Ratio	89.7	92.3	93.7	96.6	98.7	100.0	100.0	100.0	100.0	100.0
Electronic Ratio(Exchanges)	23.3	34.4	44.4	55.7	64.9	72.0	77.1	81.0	87.6	95.1
Digitalization Ratio	0.2	0.1	0.6	3.9	8.5	14.0	17.0	24.1	35.7	53.6

Table 5. Modernization of the Telecommunications Network(%)

3) Domestically Developed TDX Series Digital Exchanges Deployed

In 1979,the first prototype TDX electronic switch was produced in Korea. From 1982 over the next five years,a total of 24 billion won was spent after which 24,000 lines of the first model exchange,TDX-1,from four local manufacturers were installed in four areas in 1986. In 1987,a total of 189,000 lines in 36 areas nationwide went into service with the newly developed model exchanges. TDX-1B,an improved version of the first generation TDX switch,became commercially available in 1989. Based on the accumulated technology and know-how,the next generation switch, TDX-10 was developed with a budget of 56 billion won. It can accommodate 100,000 subscribers. Currently,over five million lines are in operation using the TDX series switches nationwide.

(Unit : 1,000 lines)

	Number of Lines with TDX Switches				Proportion of TDX Lines to Total (%)
	TDX-1	TDX-1A	TDX-1B	TDX-10	
'86	27	-	-	-	0.3 (27/8,905)
'87	27	343	-	-	3.6 (370/10,222)
'88	28	691	-	-	6.0 (719/11,240)
'89	36	915	438	-	10.0 (1,389/13,354)
'90	36	947	1,635	-	17.0 (2,618/15,293)
'91	36	1,010	3,143	62	24.0 (4,251/17,511)
'92	0	1,014	3,826	730	29.0 (5,570/19,020)

Table 6. Supply of TDX Lines (1986-1992)

5. Major Changes in the Policy due to Environmental Changes

1) Preparation to Privatize Korea Telecom

In order to substantially improve the efficiency of the management in Korea Telecom, to improve on the service quality,and to effectively cope with market opening and competition,it was decided to sell 49% of the equity held by the government starting from 1990. The corporate statute was accordingly amended in 1989,where it was stated that the capital be doubled to 5,000 billion won,the government hold over 51% of the equity,and foreign equity ownership be limited.[1] The plan to sell the stock has not yet been realized due to the depressed stock market. With the local stock market recovering this year,the prospect of privatizing Korea Telecom is bright.

2) Introduction of Competition in the Telecommunications Services Market

In 1988, the MOC relaxed the strict separation between voice and non-voice service offerings,which laid the foundation for Korea Telecom and DACOM to enter previously forbidden markets.[2] In addition,value-added network(VAN) services were liberalized in a step-by-step manner in order to prepare for the market opening.

IV. Restructuring and Introduction of Competition (After 1990)
---Manifestation of Competition

1. Background

While Korea experienced the rapid expansion of its basic telecommunications network,acquired self-reliant technologies in a number of areas,and witnessed a wide use of data communications services,the world was moving at a much faster pace with wide-spread adoption of competitive schemes in the marketplace,accelerated liberalization, emergence of innovative technologies and diversifying demands,and the intensifying desire of new players to participate in the market. The MOC reviewed the situation both inside and outside Korea to finalize a plan to restructure the Korean telecommunications market in 1990.

---

[1] Companies with 50% or more foreign ownership may not acquire Korea Telecom stock.

[2] Later in 1990,Korea Telecom and DACOM were allowed to compete against each other in the international voice telephony and data communications services.

2. Restructuring of the Market (Introduction of Competition)

In the restructuring plan,the MOC set the basic direction which stipulated that the local service market retain the existing monopoly by Korea Telecom and competition be introduced in the smaller scale and technologically sensitive long distance, international,and mobile services markets. In addition,competition would be promoted in the data communications sector where diverse services need to be developed and provided.

Telecommunications operators were classified according to ownership of the network facilities. Those with their own network facilities were classified as Network Service Providers(NSPs),and those without as Value-added Service Providers(VSPs). NSPs were further divided into General Service Providers (GSPs) mainly providing telephone,fax,and telex services and Specific Service Providers(SSPs) providing regionally and technically limited services such as paging and cellular services.

	Network Service Providers (NSPs)		Value-added Service Providers (VSPs)
	General Service Providers (GSPs)	Specific Service Providers (SSPs)	
Service Offerings	No limitation	Technically&regionally limited services	VAN services
Network Ownership	National scale network	Specific network facilities from NSPs	Lease network
Scope of Competition	Local : Monopoly Long distance&Int'l : Duopoly and gradual competition	Mobile phone : Duopoly’ Paging: Limited competition	Competition
Entry	By law or designation	Approval	Registration
Regulation	No one person to hold over 10/100 equity	No one person to hold over 1/3 equity	No limitation
Foreign ownership	Not allowed	Up to 1/3 of equity	Up to 1/2 of equity No limit (94. 1-)
Operators	Korea Telecom:by law DACOM:designation	KMTC, and others 10 regional paging providers	Multiple

Table 7. Classification of Telecommunications Service Providers in Korea

---

’ An attempt to designate the second national carrier was aborted. It is expected that a new carrier will be licensed in 1993.

3. Competition Situation

According to the restructuring,as of December 1991,Korea Telecom was allowed to also provide the data communications services that DACOM had been exclusively providing, while DACOM was allowed to compete with Korea Telecom in providing international telephone services. As in other countries,the duopolistic scheme required a grace period for the new entrant in the form of cheaper rates. In the Korean case, it was a 5% rate differential. With a recent rate rebalancing,the gap was narrowed to slightly less than 3%. In Japan,such a rate differential was initially about 25% between KDD and two other new common carriers in the international telecommunications sector. Yet,in Korea,the market share loss of Korea Telecom reached 20 to 30% in just a few months.

Meanwhile,10 additional regional paging services operators were selected and given licences in 9 regions, with 2 new operators in the Seoul metropolitan area, to begin operation in mid-to late-1993, competing with KMTC. The second cellular carrier will be selected in 1993 for competitive service offerings in 1995 or 1996. VAN services were already open to competition at the time of the restructuring. The restriction on foreign equity participation of no more than 50% in the VAN services market will be lifted in January 1994.

4. Major Achievements

During the past few years, Korean telecommunications has been witnessing quite drastic changes, that is, the introduction of competition and market opening. Although it is a little early to tell whether the policy instruments have acquired the desired results and whether they were timely, it is certain that the direction is the correct one. Major activity is taking place in the enhanced or VAN services market where a multitude of new entrants are offering new services and playing the important role of interest groups.

V. Concluding Remarks

Korea successfully constructed a large network in a short period of time, especially in the 80s. Further more, during the process, it also managed to acquire some of the key technologies in the telecommunicaitons industry. These successes may be attributed to the effective and intense government policy of promoting the development of the network and the technologies. Good indicators of the emphasis may be the high proportion of telecommunications investment in the total government investments of the 80s. The direction of the technologies was carefully forecast, situations and experiences of advanced countries were carefully analyzed, and step-by-step plans were established and carried out. The advantages of a late comer were fully utilized.

A number of important examples can be given. The introduction of digital switches was timely. The separation of the policy and regulatory function from the actual operation of the network was made early on. When the quantitative expansion of the network was achieved, competition was swiftly introduced to improve on the quality of the services and competitiveness of the Korean telecommunications industry in the face of market openings. Effective investment financing should also be mentioned. Without the policy instruments to attract subscriber support in the form of telephone and telegraph bonds and installation charges, such massive expansion of the network would certainly have taken longer. Finally, as part of the national economic development plan, key technologies were accumulated, especially in the process of developing the TDX series of digital switches. The development dramatically facilitated other related industries such as the semi-conductor and computer industries.

Although the role of the government policies was absolutely positive and pace-setting in the past, the scope and effectiveness of the government policies in the old framework could significantly affect timely advancement of the Korean telecommunications industry in today's fast changing environment. Aided by the election of the new President and his appointment of a new Cabinet, a renewed emphasis is being placed on the information society and the telecommunications industry. In order to further promote development in the industry, an intense effort is being directed toward liberalization of the market and minimal regulatory intervention. In the future, fair competition safeguards, coordinated R&D activities to develop core technologies, minimized investment overlaps, controlled liberalization and competition between carriers will be the focus of the government policies in this important sector.

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Case Studies

An ASEAN Survey of Privatization and Corporatization

John Ure
Hong Kong University, Hong Kong

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

CORPORATIZATION AND PRIVATIZATION OF TELECOMMUNICATIONS IN ASEAN COUNTRIES

John Ure
Research Associate
Centre of Asian Studies
University of Hong Kong

Abstract

Which factors can be identified to explain what Government's do or don't do in the realm of telecoms reform? Petrazzini has recently suggested an explanation in terms of a country's political system. Looking at the ASEAN countries I focus instead on the need for local social forces committed to the idea of national development. I argue for research which is country specific.

In his essay 'The Politics of Telecommunications Reform in Developing Countries', which deservedly won a PTC Research Prize and appears in the March 1993 issue of the **Pacific Telecommunications Review**, Ben A. Petrazzini addresses a very important question, viz: "why countries with similar socio-economic profiles, trying to implement shared telecom reform goals under similar historical circumstances, achieved divergent outcomes in their restructuring efforts." (p.4)

Using paired examples of Argentina and Thailand, Mexico and Malaysia, the author develops the argument that 'evidence suggests that a low degree of state autonomy and power concentration within the state is strongly correlated with the likelihood of failure in the reform of state monopoly." (p.5) By contrast, a strong state with authoritarian tendencies is more likely to achieve its goals.

> "More concretely, the central hypothesis is that countries with a highly autonomous state and strong concentration of power in the executive branch are more capable of privatizing their SOEs [State Owned Enterprises] and liberalizing different segments of the telecoms market than those in which these patterns are absent." (p.21)

I disagree with the symmetry of this argument, but that does not detract from the importance of putting it. Petrazzini's essay provides us with a framework within which we can ask interesting questions about the restructuring and reform processes. In the following paper I hope to develop this theme a little further. In doing so I aim to do two things: (i) to review the current state of reform in telecommunications policy in the ASEAN countries, and (ii) to argue that the issue of national economic development is much more central to the policy debate, at least in the ASEAN countries, than Petrazzini gives credit.

THESIS

Let me state my thesis. The key element in the determination of industrial policy outcomes in developing countries is the absence or presence of a powerful social force within the state which has a self-interest in, and identification with, national economic development. In most cases, if such a force exists it will represent some level of coalition, and because in each country its specifics are historically determined, so each country requires independent analysis. (For example, see

Mackie, 1988, for an essay on the political underpinnings of economic growth in ASEAN countries).

This is so even when circumstances, such as ASEAN countries' exposure to the world economy, are held in common, for clearly countries as different as Singapore, Thailand and the Philippines stand to gain or lose in quite different ways from policies such as free trade, or the removal of controls on capital or exchange transactions. And economic gainers and losers within a country quickly translate into social and political gainers and losers. So Petrazzini must be correct when he states that "politics and the distribution of power in a society is a key element in the restructuring of telecommunications in the developing world." (p.21) The problem, as I find it, is that this emphasis upon the power factor under-estimates the presence, or absence, of what we might term the 'ideology of development'.

The paper will divide into the following sections. First, I shall consider why ASEAN countries should be lumped together for the theme of this paper. Second, I shall review the current state of reform in the telecommunications sectors in five of the six ASEAN member countries. In this part I shall also highlight the element of national economic development in the debate. Finally, I shall draw some conclusions concerning the opportunities and the dangers involved with corporatization and privatization.

ASEAN

Hukill and Jussawalla (1991) provide an informative overview of the state of telecommunications in the ASEAN six: Brunei Darussalem, Indonesia, Malaysia, the Philippines, Singapore and Thailand. There is no need to repeat the vital statistics here, but as these authors do not provide supply or demand projections of telephone lines it may be useful to do this for Indonesia, Malaysia, the Philippines and Thailand.

Estimates of Supply or Demand Forecasts
Telephone Lines and Telephones Per 100 Persons

	1990	1994/95	1999/2000/2002
Indonesia			
Exchange Lines	1.4m	3.1m	7.1m
Density	0.7%	na	3.1%
Malaysia			
Exchange lines	1.6m	3.0m	6.5m
Density	9%	15%	26%
Philippines			
Exchange lines	0.7m	1.1m	na
Density	1.1%	1.9%	2.4%
Thailand			
Exchange Lines	1.8m	3.2m	5.0m
Density	3.2%	5.3%	na

Sources: Asian Communications, February 1993; Kamal Salih, et al. (1993); Telegeography 1992 (IIC); Lichauco (1992); Pupphavesa and Stifel (1993)

The figures for Thailand are estimated demand figures, and it would not be fair therefore to draw inferences about Thailand's telecommunications sector in comparison with the targets of Indonesia and Malaysia. But it would be fair to suggest that their shortfall almost certainly under-estimates demand growth potential.

Why focus upon the ASEAN countries at all? Why lump them together? Clearly Indonesia, Malaysia, and Thailand are 'newly industrializing countries' or NICs, and the Philippines has not given up trying to be one. Singapore, by comparison is a developed country, but is also their trading and communications hub, and is economically more essential to each of them than any of the others. (See below). So they do share an economic platform within South East Asia, but their membership of ASEAN was never primarily economic. It was always a political forum first and foremost.

So the answer, I suppose, is that as a political bloc ASEAN membership implies a common purpose, or at least the search for a common purpose. That common purpose has always included economic co-operation and development based upon the aim of co-ordinating economic policies, and it is for that reason that we may legitimately ask whether policy co-ordination aims to go beyond issues such as tariff and non-tariff barriers to trade to include trade and industry issues such as trade-in-services, domestic market liberalization, and regional standards agreements. Mobile roaming agreements would be a case in point. All these issues have at least been raised within the economic committees of ASEAN.

But the essential element for each member state has been the issue of national interest, which embraces national identity and national economic strategy, what we may term political economy. Intra-Asian economic co-operation has received lip-service, but higher up the agenda were the political challenges of the Cold War period. This was the perceived external threat determining the circumstances within which ASEAN was formed, however the pressure for ASEAN really arose out of the need to overcome frictions between the member states themselves. Now the external threat is seen to diminish, ASEAN countries have a choice: either to limit themselves to the political management, and hopefully the resolution, of old tensions, or to give new meaning to the aims of economic co-operation through the promotion of freer trade and investment within the region.

It would seem that efforts are being made to promote this economic vision. On 1st January 1993 the ASEAN Free Trade Agreement (AFTA) formally came into being, creating a market of 330 million people and an integrated GDP of US$293 billion growing at an average of 7 per cent a year. (FEER 15/4/93) In 1991 intra-ASEAN trade flows totalled an impressive US$33 billion, or 11 per cent of integrated GDP, but a closer look at the IMF's **Directions of Trade Statistics Yearbook** shows that 87 per cent of that was bilateral (and re-export) trade with Singapore. Trade between Malaysia and Singapore alone accounted for 51 per cent of it, Thailand and Singapore taking a further 18 per cent, and Indonesia and Singapore taking nearly 13 per cent.

Geography, and to some extent ethnicity and languages, bring communities within ASEAN countries close, but economically there are no outstanding synergies, and until recently political unity has arisen more from discord than from concord. The level of economic co-operation and industrial policy co-ordination between member states will be determined by the political will to place national development on the regional agenda. This is most stridertly espoused in the "Look East" thinking of Malaysia's Prime Minister Dr Mahathir and his proposal for an East Asian Economic Caucus (EAEC) which excludes North America. By contrast, Indonesia's preference for inclusion of the USA through the Asia Pacific Economic Co-operation (APEC) organization reflects both a greater political and economic reliance upon old relationships.

Perhaps the most powerful argument for regionalism is the fact that local companies, including those in the field of telecommunications equipment and network (usually microwave) management, can hope to enter regional markets, including possibly Australia, New Zealand and China, but stand little chance, at this stage in their development, to compete internationally and certainly cannot offer global services. So Singapore Telecom has a subsidiary STI which is signing agreements in the Philippines, Indonesia, Thailand as well as Indo-China. Technology Resources (TR) of Malaysia has entered the Indo-China market and is actively seeking entry elsewhere. Shinawatra of Thailand has similar ventures, and so on.

So in these areas ASEAN's industries can develop synergies which are not very apparent at the macroeconomic level. As companies make the moves, Governments will become more attuned to them and this will reinforce local social interests in regional co-operation in economic liberalization and regional co-ordination of industrial policy, such as the deregulation of telecommunications markets. But the lessons of the regional NIEs (Newly Industrialized Economies) South Korea, Singapore and Taiwan - even Hong Kong to an extent - and from Japan is that successful national development requires purposeful economic and industrial strategies from the state.

These are unlikely to happen until sufficiently influential social forces coalesce around an ideology of national economic development. Until this happens within a country, telecommunications reform is unlikely to happen in reality, even if assets are shifted from the monopoly of the state to the monopoly of private interest groups. To ignore this problem is to confuse policy success (eg. a successful privatization) with the aims of policy (eg. achieve an efficient and universal telecoms service). Again, I think Petrazzini's assessment of the success or failure of policy implementation does not give this problem sufficient attention.

TELECOMMUNICATIONS REFORMS

My argument is that where a clear vision of national economic development arises in the ASEAN countries, reform in the form of corporatization and privatization has, and will, proceed. The following paragraphs try briefly to substantiate this argument by member states.

1. INDONESIA:

Indonesia is one of the states Petrazzini classifies, alongside Malaysia, as having a " state corporatist" political system, in contrast to Thailand's "openly-pluralist" one. Yet Indonesia's approach to telecommunications reform is far closer to Thailand's than Malaysia's (see below). That is to say, it has hardly begun, and liberalization such as there is ties new entrants to revenue-sharing arrangements with the state corporate monopolist. And Indonesia and Thailand very obviously share a powerful military influence over both state machine and many industrial activities. Rather surprisingly, Petrazzini pays little attention to this factor.

There is little evidence of any social force in Indonesia closely identified with the theme of national economic development as such. Recently the FEER (22nd April 1993) noted that "Indonesia is yet to show any signs of evolving a real middle class, the main impetus for local consumer-targeted domestic manufacturing." (p.42) Indeed the main thrust of the Government's policy to promote economic growth is rather to focus upon tourism, oil extraction and duty-free status for off-shore investment in the string of islands closest to Singapore. The Batam island development began the process, with the assistance of Singapore Telecommunications.

The snail's pace of telecommunications reform was initiated by the Telecommunications Law Number 3 of 1989, which amended 1964 legislation. It introduced the private sector into the market by licencing small shops and kiosks known as WARTELS to operate telephone, telex and fax services, handing over 30 per cent of the revenues to Perumtel, the state monopoly domestic carrier. There are 650 WARTELS of which 70 per cent are privately-owned. (Prasetyo and Djiwatampu, 1991). Perumtel was corporatized in 1991 and subsequently renamed PT Telkom. The idea of 'privatizing' by entering into revenue-sharing agreements with small operators cannot be called radical. It just represents a way around a management problem.

That problem was not just insufficient exchange capacity, but a chronic failure to utilize capacity. Exchange lines were simply not connected to subscriber premises. Tapping small scale private capital by contracting-out line connections was a safe way to leave the monopoly intact. For example, preferential treatment is offered to building contractors who pay for the line connections and recoup the money in the enhanced value of their property sales. Compensation agreements allow others to buy their way to the head of the waiting list in exchange for a period of free service.

Until recently all the deregulated services, from Vsat data communications to cellular phones to pagers, were run on a revenue-sharing basis with PT Telkom, and the views expressed by the Director-General of Posts & Telecoms (Prasetyo and Djiwatampu, 1991) justified this arrangement on the grounds that it ensures a revenue to the carrier with responsibility to provide national services. In the paper he suggests that not until telephone penetration rates have reached between 10-20% should more radical forms of privatization be contemplated. That will be more than a decade off. Only 50% of district capitals and only 25% of Indonesia's 65,000 villages have telephone access. But in a 1991 World Bank report consultants Booz, Allen & Hamilton apparently took a different view, arguing that the lack of a telecommunications infrastructure was already costing Indonesia about US$2.5 billion annually in lost GDP.

The Government in Indonesia has been studying this report and its implications ever since. I understand that one of the many issues discussed is how to reconcile more thorough-going privatization with service to rural and remote areas. This is clearly an issue where sharing experience from other countries would be valuable. But overlying this aspect of reform is another. The political spoils of power. It was expected that PT Indosat, the monopoly international satellite carrier, would be corporatized in 1993. Recently the Government has announced the setting up of a joint venture company, PT Satelindo, to manage the new C-generation of Palapa satellites, in which PT Indosat has only a 10% stake, PT Telkom a 30% stake, and PT Bimagraphia (a subsidiary of Bimantara, a company closely associated with the President's second son) is given the controlling share. No public tendering was involved, and decision by decree is expected.

One concession to private, especially foreign-owned companies, that has been discussed is the dropping of insistence upon the BTO form of co-operation and allowing a BOT involvement in non-basic service areas. According to

Hukill (1992) Singapore Telecom has secured such an arrangement with PT on the islands of Batam and Bintan which form part of the "Golden Triangle" between the Riau group of islands, Singapore and Johor State.

What is to be concluded from the brief review? That the process of corporatization has just begun. That privatization remains a very restricted concept. That competition is as yet given little debate. But what is more, there is no evidence quoted here of seeing telecommunications as a vehicle of national development. Yet obviously national development is a growing feature of Indonesia's record as a NIC, and Indonesia's Second Long Term Plan does emphasize more balanced regional growth. (Tirta Hidayat, 1993) All we may conclude at this stage is that telecommunications does not seem to be debated in these terms. We should expect discussion of industrial sectors and their contribution in decisive terms if it were the case. Without this perspective, telecommunications policy reform seems not yet to go beyond redistributing scarce resources among influential players.

2. MALAYSIA:

In Malaysia assertive and educated professional middle-classes from the Malay, Chinese and Indian communities have constituted a social force for development. The New Economic Policy provided development goals, chief among which was to raise the bumiputra share of national asset wealth from 2.4 per cent to 30 per cent. This policy was a knife-edge between equitable growth to achieve national unity and racial divisiveness. The emphasis upon redistribution (which officially achieved a 20.3 per cent share for bumiputra groups) is replaced under the National Development Plan with an emphasis upon raising the quality of bumiputra management, national labour skills, and quality in technology and production. The 6th Malaysia Plan (1991-5) and the Second Outline Perspective Plan (OPP2: 1991-2000) aim between them to sustain a 7 per cent annual average rate of real GDP growth.

Within this framework of national development strategies the role of utilities first as infrastructure, and then, in the case of telecommunications and information technology, as sources of economic growth in their own right, has been positively identified. At the same time the power elite have made sure that reforms in these areas fall under the control of people and groups allied to their own political parties. For example, the Renong Group of companies, which may be considered the industrial investment arm of the ruling Umno Baru party, lists numerous utilities among its holdings, including PLUS which has the contract to construct the North-South coastal highway and Time Engineering which is laying an optical fibre cable along the highway for traffic communications and is licenced for telecommunications services.

This cable will be the backbone for a second national network announced by the Telecoms Ministry in January 1993. (Business Times 10/2/93). For the moment Telekom Malaysia holds the exclusive franchise on basic PSTN services, although since 1974 the Ministry's telecommunications department, Jabatan Telekom Malaysia (JTM) has awarded Uniphone, owned by Sapura Holdings (a well-connected equipment company who also hold a paging licence) a revenue-sharing contract to install urban public telephone booths.

The decision to corporatize and privatized Telekom was planned as early as 1984 (Bruce and Cunard, 1992). The impetus came very much from Dr Mahathir who became Prime Minister in 1981, and who instructed the Cabinet's Economic Planning Unit to initiate a series of policy changes, partly to relieve the Government of growing fiscal problems. (Aziz, 1992). But Dr Mahathir's proposals went far beyond averting financial crisis. They clearly constitute a vision of development. Between 1984 and 1987 Syarikat Telekom Malaysia was corporatized and equity in the company was offered in November 1990. The Government retained a 76 per cent share, 16 per cent went to local investors, and 8 per cent to overseas interests.

As part of the NDP, a National Telecommunications Policy (NTP) was draw up in 1990 with the following aims: (i) to make telephony available to every citizen at affordable prices; (ii) to support national economic and technological development; (iii) promote competition in supply of equipment and services; (iv) encourage the growth of the industry itself; (v) promote resource and human skills development in the sector; (vi) promote growth of value-added services; (vii) promote connectivity with global networks (See Salih et al., 1993). And within the scope of Prime Minister Mahathir's Vision 2020 for Malaysian development, public utilities like telecoms are expected to match developed country standards by 2005. To this end, Telekom Malaysia is committing 20 per cent of its investment to the year 2000 to rural telecommunications. (K.H.Chan, 1992)

Competition is a clearly stated aim of policy, but it is closely tied to the issue of planning national development, and in practice closely associated with promoting interests close to the ruling political elite who clearly identify their interests with national development. So, for example, while Time Engineering was more or less required to sell its stake in Celcom, the second cellular network which competes with TM's NMT 450MHz system and an AMPS 800MHz system run by a TM-joint venture which includes Sapura, Time Engineering has also acquired 63 per cent of INC which offers satellite data services. Another company with good political connections, Binariang, has been offered a GSM licence and a licence to launch and operate MEASAT if they can obtain an orbital slot.

Interconnection between these alternative private networks will eventually give rise to a second PSTN network firmly under Malaysian control. But the process is far from transparent. Public announcements are usually made weeks if not months after licences have been promised. And there is no clear regulatory framework yet emerging. Petrazzini's account focuses upon the weakness of the opposition, mainly from the labour unions, to corporatization and privatization, as evidence of the ability of a corporatist state to push through its policies, but the really glaring weakness of the process is not opposition, or lack of it, but opaqueness and meanderings. National development ultimately requires more transparency of process, and a more open information system if debate is to add value to policy.

3. THE PHILIPPINES:

The ruling elite of the Philippines, the "lords of privilege" as the World Bank representative called them (FEER 6/5/93), is not known for its commitment to national economic and social development. The Marcos years did not invent graft and corruption, and the Aquino years apparently had little success in eradicating it. And few wealthy Filipinos seem to want to keep their riches invested in their own country. Can President Ramos help turn the tide by introducing into the mainstream of Philippines political economy the concept of national development? Proclaiming **'Philippines 2000'** in January 1993 - a highly optimistic vision aiming to raise per capita GNP from US$700 to US$1,000 by 1998 - he is reported as saying

> "We must bring down the old economic order... Competition has been distorted by political entrepreneurship, crony capitalism, and oligarchic power" (FEER 6/5/93)

The Philippines Long Distance Telephone Company (PLDT) has been the first of the old order to feel the sting in these words. Long regarded as a bastion of crony capitalism and dubious practices (see Manapat, 1993), its Board of Directors have been removed by the President who exercised the voting power of the Government's shareholding, following a scandal in the Courts in which PLDT is accused of fixing a judgement against an application by Eastern Telephone (a Cable & Wireless joint-venture) for an international gateway. (See FEER 11/2/93; 25/3/93; 6/5/93) For years national telecommunications development has been sacrificed to this private unregulated monopoly, while over sixty small operators in country areas have been denied interconnection or forced into unprofitable revenue-sharing arrangements.

Far from contributing to the development of the Philippines, the manipulation of the PLDT by powerful private interests has contributed to its underdevelopment. (See Ure, 1990). This sad state of affairs has not been helped by the chronic lack of any independent regulatory framework. Licences have to be agreed by Congress but the committees of the House of Representatives and Senate have "almost no technical resources, and are therefore open to influence from politically well-connected stakeholders." (MacPherson, 1993)

In theory the National Telecommunications Commission (NTC) is the Government regulatory arm, but its three members are appointed directly by the President and, by past practice, they have not be able to exercise independent judgement. The NTC is attached to the Department of Transportation and Communications (DOTC) which is responsible for telecommunications policy. That policy has been committed in recent years to liberalizing the markets, that is private sector competition, but in practice little can be achieved quickly. (See de Vera, et al, 1992). Most policy recommendations get bogged down in Congress, while any licence awards which conflict with the interests of the PLDT face lengthy and expensive litigation from well-funded corporate lawyers aided, it is claimed, by some of the best judges money can buy.

The results are inevitable. In 1992 the waiting list was nearly 800,000. (Cunard, 1992). Eighty-five per cent of lines are concentrated in Metro Manila leaving hundreds of municipalities throughout the country with no telephone connections at all. To fill the gap the Government's Telecommunications Office (TELOF) tries to act as supplier of last resort through a National Telecommunications Programme, with development aid from the World Bank, the ADB, Japan, France and Italy. One aim, through the Municipal Telephone Programme, is to establish Public Calling Offices (PCOs) in each municipality, and to seek a private sector partner to develop each project. So far only five private firms are involved in six of the forty-one provinces, including Digital, a Cable & Wireless joint venture, which operates two concessions. Part of the reason maybe the uncertain terms of interconnect and revenue-sharing with the PLDT on long-distance calls. (See DOTC, 1990).

The PLDT's stranglehold, and the withholding of interconnection, has so far prevented meaningful competition in cellular mobile services market as well. Two operators are currently licenced and two more tenders are up for bidding. In PSTN, the PLDT has four international gateways. Besides Eastern, Philcom (Philippines Global Communications) was also granted a licence. "This brought down international toll rates by at least 20 per cent." (Under-Secretary Sibal, 1992). International record carriers are Capitol

Wireless and Globe-Mackay and Radio Corporation who are teaming up with Singapore Telecoms to apply for a gateway voice licence.

On the domestic front two record carriers among nine dominate the market. They are the Philippines Telegraph and Telephone Co. (PT&T which owns Philcom) and Radio Communications of Philippines (RCPI). Domestic satellite and Vsat operators include the Philippines Communications Satellite Corp (PhilcomSat), Clavecilla Radio Systems, Liberty Broadcasting Network Inc., and International Communications Corp. A 1989 mandate abolishing monopolies provides the constitutional backing for entry into these markets.

The picture is one of chaotic and ill-defined competition, with no guaranteed interconnection standards, no means of enforcing genuine competition, oligopolistic collusion is reportedly rife, and there is no clear delineation of jurisdictions between policy, legislative and regulatory functions. Optimists may see glimmers of light through the gloom and mist, and patches of sunlight are emerging, but the fundamental problem remains.

There are no social forces sufficiently strong or united to offer an alternative to the "old economic order" and to "oligarchic power" and there wont be until a way is found to bring an end to armed conflict and reunite civil and political society. National development is still not yet on the agenda, and a way has to be found to put it there. Only then will the necessary administrative reforms (legal, political, regulatory) be possible to make a success of sectoral policies, including telecommunications.

4. THAILAND:

Thailand shares, and suffers, with Indonesia and the Philippines the role of the military in politics. It is said of Thailand that the military only allow civilian Governments when the armed forces cannot decide between themselves which of them should rule. It remains to be seen whether that is still true, but no study of the Thai military suggests that it is a social force which identifies particularly with national development. On that basis we should expect that telecom policy is not far advanced despite rapid economic growth of recent years. This growth, brought about largely through foreign investments, is now running into increasingly severe communications bottlenecks. (Pupphavesa and Stifel, 1993)

For years the Communications Authority of Thailand (CAT), which is responsible for international telecommunications services, was the fiefdom of the Air Force, while the Telephone Authority of Thailand (TOT), which is responsible for domestic PSTN services and traffic to Malaysia and Laos, was the fiefdom of the Army. Both organizations are unregulated monopolies. Recently the civilian Government has removed the armed forces chiefs from these two bodies, a move widely seen as preparation for the privatization of both bodies in the near future.

A complication is the past practice of issuing revenue-sharing concessions to private companies, which both CAT and TOT have been instructed to halt. The TOT has issued thirteen concessions since 1989, including 2 million lines in Bangkok to TelecomAsia, and the CAT has issued five since 1986. But the Posts & Telegraph Department (PTD) has also issued two, and the Ministry of Transport and Communications (MOTC) has issued concessions. The really big concessions have also been fought over at Cabinet level between the appointees of rival political parties, often alongside accusations of payoffs. The overlapping of authorities in Thailand reflects the past practices of sharing the spoils of the telecoms markets between well-connected interest groups.

A common practice is to raise considerable sums of capital through local stock markets on being awarded licences, but since the concessions are usually on a BTO (Build-Transfer-Operate) basis there is no necessary long-term commitment to technology improvement, especially when the concessionary period enters its latter half. So large sums of money are made for the licensees, but long-term public benefits are not guaranteed. This is not a way to roll-out telecommunications networks if national development is the aim. In the past it hasn't been.

Despite these all too familiar scenarios there are signs of an emerging concern with national development issues. After all, rapid economic growth has been regionally and socially unbalanced, and while development may imply growth, growth does not equate with development. The concern with development is expressed at central level through the National Economic and Social Development Board (NESDB) and through the Office of the Prime Minister which has recently established a National Telecommunications System and Information Technology Development Committee to facilitate telecoms policy. The NESDB is responsible for drawing up the Eighth 5-Year Plan (1996-2000) under which the privatization of CAT and TOT is likely by amendments to the 1934 Telephone & Telegraph Act.

The TOT has appointed an international accountancy firm to prepare for this, and the CAT has appointed the Thailand Development Research Institute to advise it. Of course, the proposal to privatize the CAT and TOT was floated in the 1980s only to be defeated by labour opposition and military opposition. Labour concerns will still need addressing, but for the moment the military factor has diminished.

The closest Thailand has to a regulator is the Director - General of the PTD who has been appointed Chairman of the CAT. He is said to be opposed to the idea of a separate regulatory body being established to oversee privatization and competition, but last year the MOTC proposed a National Communications Board to do this job. Unfortunately this body was to consist of leading Ministry officials, chaired by the MOTC, and including armed forces personnel. (Asian Communications, January 1992). Needless to say, a body constituted in such a way would just build political brokerage back into the system. It will be a major test of change to see how this issue is handled.

The profile of Thailand's telecommunications markets looks fairly open. The CAT operate a paging system and have licenced three private networks including Pacific Telesis, while TOT has licenced two, Shinawatra and Hutchison. The TOT operates a trunk radio network, as does the CAT which has also licenced one other. The CAT operate a manual radio telephone service, one AMPS cellular network and have licenced a second. The TOT runs an ATUR NMT 470 system and an affiliated company uses the NMT 900 system. The TOT has a GSM licence and the CAT a go-ahead for PCN. Under revenue-sharing concessions Vsat, CT2, data communications and paging services are all on offer from the private sector. In addition to the 2 million lines in Bangkok (TelecomAsia) and the 1 million outside Bangkok (Thai Telephone & Telecoms Co or TT&T) the greatest concession of recent years has been to Shinawatra to launch and operate ThaiSat on an 8-year exclusive franchise. It was fierce debate at Cabinet level over these concessions that apparently led to a reconsideration of the future roles of TOT and CAT in the development of telecommunications in Thailand.

There are fears, under these circumstances, that privatization of TOT and CAT will achieve little more than hand over money-making privileges to private interests. Without an independent and powerful regulator to ensure genuine competition, free entry, capital investment for the long-term, and service obligations, these fears are probably justified. Again I return to my main point: without the emergence of a national concern with development, privatization has little meaning. Recent history suggests there are social forces in Thailand wanting to reject both the corruption of the political parties and the big-business dealings of the military. But will they prove resilient and determined enough to make this a watershed in post-war Thai history? If they are, then telecommunications policy should reflect it and will benefit from it.

5. SINGAPORE:

National development has been so successful in Singapore, and telecommunications so advanced, the real question is why was Singapore Telecom corporatized in 1992, along with its subsidiary Singapore Posts, and why will it be privatized in 1993? The usual reasons for corporatization and privatization in Asian countries is that state management is often inefficiency, sometimes corrupt, there are problems of public finance, the country lacks infrastructure, and so on. None of these apply to Singapore.

Again the answer seems to lie in the very concept of national development. Singapore "experienced a sharp recession in 1985. This prompted a major review of existing government policies and the formulation of a new economic development strategy to further diversify the economy and to improve its resilience." (Wong, 1993, p.3) The Government raised the proposal to privatize certain public statutory bodies and Singapore Telecom was subsequently chosen to begin this programme. Resilience has meant developing Singapore as a regional high technology hub, and increasing the penetration levels of Singapore's overseas investment and earnings.

One aspect of attracting foreign capital is to build up Singapore's own stock market by widening its base within Singapore. This will also facilitate longer-term Singapore's own corporations seeking funds for overseas enterprise. Hukill (1992) makes the following points

> "The decision by the Government to privatize Singapore Telecom was not due to the need to change telecommunications policy itself, but was intended

> to support the national financial institutions and add to the overall economic performance of the nation. (Hukill and Jussawalla, 1991). As such, models for privatization which have largely come from the US, UK, Japan and more recently Australia and New Zealand are largely inappropriate to the rest of the Asia-Pacific region." (p.8)

The sting is in the tail. Privatization of telecoms in Singapore remains a pro-active instrument of national planning. So privatization does not imply competition. Singapore Telecom has been granted a 15 year exclusive franchise over basic services. Even value-added services are not being opened-up for the time being. Initially around 10 per cent of the shares will be floated available only to local citizens. Later foreign investors will be allowed in, but they will limited to around 3 per cent. (Hukill, 1992, p.8).

Singapore's vision, first raised in the National IT Plan of 1986, is its concept of an "intelligent island" which the IT 2000 programme is designed to create. The Ministry of Trade and Industry (MTI) laid the policy foundations for this project in its 1991 Strategic Economic Plan which is to be carried through by bodies such as the Economic Development Board (EDB), the National Computer Board (NCB), and the National Science and Technology Board (NSTB). (Wong, 1993). Telecommunications is seen, by providing a network of networks, as central to this endeavour. Hukill (1992) makes the further point that

> In order to develop and deploy advanced technologies, there is a need for a greater interdependence with networks of other countries to provide economically viable services. A private operation, even nominal, has advantages in forming these interdependencies." (p.11)

The promotion by the Government of EDI is an example of this. Singapore is already networking with Malaysia and Indonesia. A further aspect of the strategy has been the forming of Singapore Telecom International (STI) as the overseas investment arm of Singapore Telecom. STI has been very actively pursuing overseas business throughout Asia and the Middle-East.

Singapore, as a NIE, is clearly not typical of other ASEAN countries. But one reason why it has become a role model for many developing Asian nations is precisely because it has a development ideology which it pursues with something close to single-mindedness.

CONCLUSION

To keep this very short, let me make four points, and a final comment. First, corporatization is almost certainly the first essential step towards technical and economic efficiency in the provision of telecommunications services. It allows for a flexible choice of policies by the Government, ranging from state monopoly to multiple entry competition and total privatization.

Second, privatization as such just redistributes resources to private interests who may not use them well. On the other hand it opens the doors to capital markets which lowers the costs of finance. But privatization has many forms, and in ASEAN countries it has, up to now, usually meant little more than revenue-sharing agreements. It is beginning to mean something else, namely minority public holdings of equity.

Third, competition leading to innovation, efficiency and user choice are the real ingredients of reform. Competition can take many forms, even competition between companies which are state owned. As ASEAN countries begin to open their economies to each other competition will come in through the front door, and that issue has to be faced.

Fourth, the role of an independent regulator is absolutely essential to reform. It is essential to ensure that competition does not mean collusion. It is essential to ensure genuine free entry and exit from the market. It is essential to ensure interconnection terms and standards. It is essential to expose corrupt practices. It is essential for consumer protection. And, finally, it is essential if the conflict between the aim of universal service and commercial market entry is to be resolved. Experience outside ASEAN countries give good lessons on how that can be achieved.

I have argued in this very long paper (my apologies for that) that the key to all the above is the emergence of social forces within ASEAN countries which identify with national development. I have tried to illustrate the correlation by example from five of the ASEAN countries. My argument differs from Petrazzini's excellent and stimulating paper (too stimulating judging by the length of this one!) in this one regard: I look to social-economic forces, he looks at political systems, so I highlight development and its obstacles, he highlights policy implementation and its obstacles. My underlying question is: where does policy come from? Who makes it and why? I think by researching that question, country by country, and within blocs like ASEAN, a much better understanding of the pace and direction of telecoms policy reform can be achieved.

REFERENCES

Baharuddin Aziz (1992) 'An Exercise in Privatization: The Making of Telekom Malaysia' Pacific Telecommunications Conference, Hawaii, 1992

Robert R.Bruce and Jeffrey P. Cunard (1992) 'Restructuring the Telecom Sector in Asia: An Overview of the Different Approaches and Options' IIC Telecommunications Forum, Hong Kong, 6th-7th April

Chan Khay Heong (1992) 'Malaysia' IIC Telecommunications Forum, Hong Kong, 6th-7th April

Jeffrey Cunard (1992) 'The Role of PLDT and Private Operators in Developing Telecommunications Infrastructure in the Philippines' IIC Telecommunications Forum, Hong Kong, 6th-7th April

DPTC (1990) **National Telecommunications Development Plan 1991-2010: Executive Summary**, Manila

Mark Hukill and Meheroo Jussawalla (1991) **Trends in Policies for Telecommunication Infrastructure Development and Investment in the ASEAN Countries**, Institute of Culture and Communications/ East-West Center, Hawaii

Mark Hukill (1992) 'Overview to ASEAN Regional Telecommunications: Development Interests in a Global Environment' Pacific Telecommunications Conference, Hawaii, 1992

Tirta Hidayat (1993) 'Economic Growth and Information-Telecommunciations Infrastructure in Indonesia', 5th Institute for Posts & Telecommunications Policy International Conference, Institute Tokyo, March.

Helen Hughes ed. (1988) **Achieving Industrialization in East Asia** Cambridge University Press

Josefina Lichauco (1992) 'National Telecommunications Development Plan 1991-2010' IIC Telecommunications Forum, Hong Kong, 6th-7th April

J.A.C.Mackie (1988) 'Economic Growth in the ASEAN Region: The Political Underpinnings' in Helen Hughes ed. (1988)

Stuart MacPherson (1993) 'Regulatory Strategies in the Philippines' Pacific Telecommunications Conference Workshop, Honolulu.

Ricardo Manapat (1993) **Wrong Number: The PLDT Telephone Monopoly,** Manila, The Animal Farm Series

R.Prasetyo and Arnold Ph.Djiwatampu (1991) 'Telecom Deregulation in Indonesia' IIC Telecommunication Forum, Sydney 17th-19th July

Wisarn Pupphavesa and David Stifel (1993) 'The Thai Economy and Communications Infrastructure', 5th Institute for Posts & Telecommunications Policy International Conference, Institute Tokyo, March.

Kamal Salih, N.Danaraj, Michael Yap Meow Chung, Paramjit Singh (1993) 'Economic Outlook to the Year 2000 and Telecommunications Infrastructure Development in the Case of Malaysia', 5th Institute for Posts & Telecommunications Policy International Conference, Institute Tokyo, March.

Rosauro Sibal (1992) 'Key Telecom Developments in the Philippines' IIC Telecommunications Forum, Hong Kong, 6th-7th April

John Ure (1990) 'Philippines Telecoms: Trickling Into Tomorrow' Pacific, April, Barclays de Zoete Wedd, Hong Kong

R.I.de Vera, C.H.McGlone, R.L.Rothery (1992) 'Privatization of Telecommunication Facilities in The Philippines' Pacific Telecommunications Conference, Hawaii, 1992

Wong Poh Kam (1993) 'Economic Growth and Information - Telecommunications Infrastructures in Singapore' 5th Institute for Posts & Telecommunications Policy International Conference, Institute Tokyo, March.

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Special Task Group Meetings

Travel/Tourism

George Darby
Law Offices of George E. Darby, USA

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

CAN DIGITAL KIOSKS FOR TRAVELERS BRING DIGITAL SERVICES TO THE LOCAL LOOP? A DEVELOPMENT STRATEGY

By
George E. Darby
Law Offices of George E. Darby
President, Information Technology & Travel Industry, Inc.

Abstract. Local exchange carriers and other telecom service providers in cities that host telecom-intensive operations of multinational corporations have comparatively little worry about justifying the expense of upgrading those cities' end-office and tandem switches to advanced digital switching technologies. The multinational corporations in those cities are not only happy to pay for ISDN, they are already clamoring for bandwidth-on-demand technologies like ATM. In cities without multinational operations and in suburban and rural areas, demand for the digital local loop by less sophisticated users defies prediction; a telecom service providers' cost-justification problem is correspondingly much more difficult. This paper examines a telecom development strategy that uses virtual office and travel information services to extend the benefits, and demand, for digital network access to such "low demand" areas.

Information Technology Convergence and the Traveler. To date, local exchange carriers and other telecom service providers that have deployed ISDN-capable switches have had great difficulty convincing anyone but multinational corporations to subscribe to ISDN, much less to adopt more advanced, "bandwidth on demand" digital services. Yet, the telecommunications and computer industry trade press, and increasingly the general business trade press, is full of glowing reports on the bonanza to be had in delivering interactive multimedia to residential markets. There appears to be an immense, and growing, gap between actual consumer demand for digital services and vendors' perception of that demand. Will digitally compressed movies on demand from neighborhood video servers, interactive virtual reality games, and three-dimensional home shopping usher in the era of megabytes to the home and explosive growth of digital networks? Or is there an intermediate step in the transition to digital local loops for which a better business case can be built?

The premise of this paper is that information network providers and information service providers should examine the information needs of the most information-hungry individual of all, the traveler. The daily information and entertainment needs of a traveler are typically multiples greater than those of an average residential consumer. These information needs, and selling opportunities, include daily necessities, dining, evening attractions, maps, day excursions, language translations, emergencies, financial services, insurance, travel reservations, shopping, games, and delivery of purchases to the hotel room.

traveler's home or office, or other location. Better yet for the telecom service provider, travelers are geographically concentrated in districts that have accommodations, whether high-rise hotels in Singapore or cottages in the Cook Islands, and at attractions, like theme parks or restaurant districts. It's far more likely that business and leisure travelers will pay for information, entertainment, personal services, and teleshopping on a daily basis and do so in a more manageable geographic area as compared with widely dispersed residents who have drawers of maps, a lifetime of knowledge about local restaurants, theaters, stores, and sightseeing, an extensive videocassette library, and regular visits to favorite vendors.

Hotels: Misguided Profit Motive. The most significant marketing barrier to the scenario painted above is the traveler's access to the appropriate information appliance. The most desirable place of access to entertainment digital services is the traveler's hotel room; for information services, the best place of access is also the hotel room, and to lesser degree, elsewhere in the accommodation property or at attractions. Hoteliers have historically been uniformly opposed to the introduction into guest rooms of entertainment and information services that the hoteliers do not control. Hotels typically operate proprietary cable television systems within the hotel, complete with pay-per-view channels. By limiting guests' access to information, hoteliers reason that guests will spend more money at the hotel's own dining, entertainment, and excursion vendors. In reality, the highest non-business priority for many, if not most, guests at non-resort hotels is to identify and patronize attractions outside the hotel. Budget conscious travelers even conduct the process of identification at payphones rather than at guest room phones.

Hotels are the "far-right" (very conservative) in travel industry automation. Airlines long ago moved to boarding passes that permit travelers to appear at the boarding gate, present the pass, and board the aircraft. Rental car companies have emulated this trend: present your "boarding pass" on the vendor's shuttle bus, receive your keys, and be dropped off at the assigned car. Hotels, who are listed in the same computerized reservation systems as airlines and rental car companies, could long ago have implemented a "boarding pass" system in which the guest presents a boarding pass on a shuttle bus or to an onsite clerk and is issued room keys. The first hotels to implement a boarding pass system and to discard the "tradition" of making guests stand in line to check in (and in the most techno-void hotels, check out) will immediately garner much new business. Likewise, the first hotels to permit third-party digital services to guest rooms will attract many deserters from hotels that continue to offer only proprietary cable TV systems. The hotels that permitted third party information services in guest rooms could have contractual arrangements with the information service provider to receive a commissions for sales of goods and services to the guest.

Third party digital services in hotel rooms will provide not only information and entertainment, but will better support the "virtual office" upon which all multinationals now depend. The guest room information appliance would access a digital network. Such digital network access should enable the guest to establish communications sessions with computers in the guest's home office or at other packet- or circuit-switched terminal locations. Through such sessions, the guest could videoconference, receive e-mail and imaged documents (such as faxes), and generally conduct the usual business done in a virtual office. The information appliance could also access local printers and ticket delivery machines, so that documents, including travel documents, could be printed and retrieved on-premises. Such support for business travelers goes far beyond that provided by "business centers" in hotels, and would attract new clientele. Each guest session and transaction could generate commissions for the hotel that would far surpass revenue from POTS service and pay-per-view cable television.

Travelers and the Digital Kiosk. For security, comfort, and work environment reasons, hotel guest rooms are arguably the best location for deployment of digital information appliances. The failure of hoteliers to appreciate the relevant economic and technological trends may delay or even prevent the introduction of such services in hotel guest rooms. The alternative locations for digital information appliances for travelers are in non-hotel accommodations and in kiosks in areas frequented by travelers. Smaller hotels that now provide guests with third-party cable television, and non-hotel accommodations such as B&Bs and rental condominiums, could attract clientele from larger hotels by offering guest room or lobby digital information appliances. Standalone kiosks, which I call "digital kiosks," could provide the same support for virtual office services as information appliances in guest rooms, but with less comfort, security, and working room for the traveler.

Whether in hotel rooms, airport lounges, remote resorts, or kiosks in areas of traveler attractions, there is arguably already a market for digital services for travelers whose employers or clients use ISDN for image services and computer integrated telephony. Most airports in Japan have ISDN payphones with both analog and digital jacks. The day will soon come when we will see a traveler awkwardly videoconferencing with a notebook computer at such an airport lobby payphone. That traveler will be uncomfortable indeed if his "meeting" is open to curious bystanders. To satisfy business travelers, a digital kiosk should take a form similar to today's "snapshot" kiosks: the kiosk should have adequate lighting and folding doors that can be closed for acoustic isolation (the lower half of such doors may be transparent for security reasons). Such a digital kiosk would be a virtual office, and ideally would contain a high-res monitor, video codec, speakerphone, fax, and laserprinting facilities. Charges could be assessed based on the facilities, time, and data transfer used.

The digital kiosk could serve double duty as a multimedia travel product sales booth complete with a ticket delivery machine. The traveler might be able to trade frequent flyer miles for digital kiosk time.

A digital kiosk, or digital appliance in a guest room, would serve the immediate purpose of extending digital services to areas where such services can not now be cost justified. The digital circuit serving a digital kiosk could be a foreign exchange line to the nearest switch with the appropriate digital line card and software, or it could be served by

VSAT. VSAT introduces an undesirable delay in videoconferencing, but in remote areas this delay would certainly be tolerated compared with the alternative of no digital services.

Digital kiosks and information appliances would have an important collateral benefit: increasing awareness of digital services by those most able to afford them, business and leisure travelers. Travelers from rural areas who used multimedia facilities in hotel rooms or digital kiosks would at least understand what digital services can provide, which would help to create aggregate demand. Travelers on business who saw competitors using digital kiosks at rural offices are likely to be very vocal upon their return to their home office about their disadvantage versus their digitally enabled competitors.

Whether digital connectivity is provided terrestially in urban areas or by VSAT in non-urban areas, digital services tailored for business and leisure travelers and delivered to guest rooms and digital kiosks present a promising strategy for the cost-justifiable introduction of digital services in areas with hard-to-quantify service demand.

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Taiwan's Changing Telecom Landscape

Overview of Current Regulation/Policy

King-Teh Lee
Directorate General of Telecommunications, ROC

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

TAIWAN'S CHANGING TELECOM LADNSCAPE

Overview of Current Regulation/Policy

JIN-DER LEE

Depute Executive Secretary

Research and Planning Committee

Directorate General of Telecommunications

Ministry of Transportation and Communications

June 1993

Under the impact of de-regulation, privatization, globalization and modernization, DGT realized that in addition to accelerating its network construction, the organization structure itself needs to be changed to fit for the more competitive environment. The existing Telecom Laws and the related Statutes have to be revised at the first place.

This paper, Overview of Current Regulation/Policy, Taiwan's Changing Telecom Landscap, will present you the Current Telecom Regulations and Policy, the Ad Hoc Groups for Research and Planning of the Regulatory Reform, and the Highlights of Revised Telecom Law and Statutes.

186

I. FOREWORD

As we all know, telecommunications is a kind of business that goes along with the increasing growth and changes. This is because it must grow to meet social demand, and it must change to meet the technology development.

There are four elements that pushing us to make a Regulatory Reform in telecommunications. They are:

1. The world sees fast hi-tech development in telecom hardware and software, and a tendency toward globalization, liberalization and privatization in telecom community.
2. The information-oriented society calls for diverse and efficient telecom services in large volume.
3. Heavy pressure comes to us quite often from the public through legislative bodies and mass media.
4. We need to take necessary measures in line with our accession to GATT.

II. CURRENT TELECOM REGULATIONS AND POLICY

A. Current Regulations

1. Telecom Act

a. DGT as a Government Organization

The Telecommunications Act says in its Article 10 that:

"The Ministry of Transportation and Communications (MOTC) shall establish a Directorate General of Telecommunications (DGT) to operate telecom enterprises. The DGT organization shall be prescribed by separate statute."

As such, the DGT operates telecommunications enterprises in the ROC in the name of a government bureau under the MOTC.

b. Monopoly Status

The Telecommunications Act also says in its Article 14 that:

> "Local Governments, Public and Private Entities, or Individuals may establish and operate the following telecom enterprises after having been granted authorization and license by the MOTC:
>
> (1) Local Telephone systems; and
>
> (2) County and Country Telephone systems.

From the above provisions, we know that only local telephone service and county and country telephone services are open to the domestic private sector. But since Taiwan is of small land and the local and rural telephone services need a huge amount of capital to invest in the basic switching and transmission equipment, there has been no private sector interested in these ventures. As a result, the provisions of this Article has led DGT to become a monopoly enterprise in the operation of telecom enterprises in the ROC.

2. Statute of DGT Organization

According to the provisions of Article 2 of the current Statute of DGT Organization, the DGT is responsible for the operation of telecommunications enterprises. Besides, in its Article 5, the Statute provides that the DGT shall administer telecommunications regulation at the request of the MOTC, and may set up a subordinate regulatory department.

As such, DGT operates telecom enterprises on the one hand and administer telecom regulation on the other. Clearly, DGT plays a dual role as a "Player" and also a "Referee".

3. Regulations Governing Telecommunications Value-Added Services

To promote the development of Telecom Value-Added Services, the MOTC made public the Regulations Governing Telecom Value-Added Services. This allows Local Governments, Domestic Public or Private Entities, or Nationals to run Value-Added Services after getting a license from the DGT. Allowable types of Value-Added Services are:

a. Information Storage and Retrieval

b. Information Processing

c. Remote Transaction

d. Word Processing and Editing

e. Voice Store-and-Forward

f. Videotex Store-and-Forward

g. Electronic Bulletin Board

h. Electronic Data Interchange (EDI)

i. Others permitted by the MOTC.

B. Current Policy

In view of technological development and market demand, DGT submitted a proposal to the Executive Yuan thru the MOTC. The request was approved in 1988 as follows:

"In order to liberalize telecom enterprises, the DGT should be reformed to have a State-run corporation in full charge of telecom operation, as a step to keep the DGT prepared for the privatization of telecom enterprises. On the other hand, the Post-Reform DGT should be responsible for telecom administration and supervision. The MOTC is authorized to set up an ad hoc group to actively carry on necessary planning.

This decision guides our telecom policy into the following directions:

1. Telecom Enterprise must be liberalized to meet diverse demands from the public.
2. Telecom operations must be set apart from its administration. That is to separate the role of a PLAYER from that of a REFEREE.
3. The MOTC is required to set up an ad hoc group to engage in planning and research.

III. AD HOC GROUPS FOR RESEARCH AND PLANNING

In June, 1988, the MOTC set up a "Steering Committee" for Modernization of Telecom Policy and Regulations and three "Working Groups" under the Committee as follows:

1. Group for Corporatization of Telecommunications Organization, chaired by the Director of Telecommunications and Posts of the MOTC.
2. Group for Liberalization of Telecommunications Services, chaired by the Director of Science and Technology Consultants, MOTC.
3. Group for Revision of Telecommunications Law and Regulations, chaired by the Secretary General of the MOTC.

In the same year, the DGT organized three Sub-Groups in line with the MOTC's Working Groups. They are:

1. Sub-group for Telecom Corporatization, headed by the Director of DGT Personnel Department.
2. Sub-group for Telecom Liberalization, headed by the Director of DGT Business Department.
3. Sub-group for Regulatory Modernization, headed by the Research and Planning Committee, DGT.

IV. HIGHLIGHTS OF REVISED TELECOM LAW AND STATUTES

As an outcome of three years' study from 1988 thru 1990, both the MOTC and the DGT reached a consensus. That is, in order to get to the goal of telecom liberalization and corporatization, we must revise the existing Telecom Act and Statute of DGT Organization, and create a new statute for Chunghwa Telecommunications Corporation.

In the following, some of the drafts of the revised Telecom Act and Statute and the new CTC Statute are being highlighted. From them, you might look into our future telecom policy.

A. Draft of Revised Telecommunications Act

1. Breakup of the Dual Role of Administrative Supervision and Business Operation

The amended Act says in its Article 3 that:

"Telecommunications Enterprises shall be under the jurisdiction of the Ministry of Transportation and Communications (MOTC). The MOTC shall establish a Directorate General of Telecommunications (DGT) in order to supervise and assist Telecommunications Enterprises and administer Telecom Regulations. The organization statute for the DGT shall be established separately."

In the meantime, the same Act adds in its Article 12 that:

"The MOTC shall establish a State-run Corporation, namely Chunghwa Telecommunications Corporation (CTC), to operate Telecom Enterprises. The Statute for the CTC shall be established separately."

These provisions clearly separate the supervisory right from the operational franchise.

2. Two Categories For Telecom Enterprises

Telecom Enterprises are categorized by countries in different ways. For instance, the United States of America placed them into basic services and enhanced services. The EC defined them as reserved services and competitive services. In our draft of revised Telecom Act, we adopted the references of Japan Telecommunications Law, that is, Category I Enterprises and Category II Enterprises.

Hence, our revised Act says in its Article 11 that:

"Telecommunications Enterprises consist of Category I and Category II.

Category I are those enterprises which install telecommunication equipment and line plants for the operation and provision of telecommunications services.

Category II are those Enterprises which operate and provide the Value-Added Services by means of the telecommunications equipment and line plants owned by the Category I Telecom Enterprise, with self-provided Computer and Affiliated Hardware and Software installations."

As for the definition of the said telecom equipment and line plants, the same Article further provides that:

"The above said Telecom Equipment and Line Plants mean the Transmission Equipment, the Switching Equipment, the Line Plants and the Associated Facilities which being installed and integrated as a Telecom Network for inter-connecting between the origination and the destination Terminal Equipment."

Although the above definitions are simple, there are something unclear in these paragraphs. Nevertheless, this shortfall is made up by the paragraph that follows, saying that:

"Business scopes of Category I and Category II Telecom Enterprises shall be proposed and submitted by the DGT to the MOTC for approval. Such business scopes shall be reviewed and, when necessary, revised every six months depending on the latest technological development and market demand."

3. Exclusive Operation by the CTC of Category I Telecom Enterprises

As mentioned earlier, the amended Telecommunications Act says in its Article 12 that:

"The MOTC shall establish a State-run Corporation, namely Chunghwa Telecommunications Corporation (CTC), to operate Telecom Enterprises. The Statute for the CTC shall be established separately."

"Category I Telecom Enterprise shall be exclusively operated by the CTC."

In other words, franchise of Category I Telecom Enterprises is exclusively granted to the CTC. Other entities, public or private, foreign or domestic, are not allowed to run it.

4. Category II Opened for Competition, with foreign participation under certain conditions

The amended Act states in its Article 13 that:

"Before commencing operation, an operator of Category II Telecom Enterprises shall file with the DGT an application for obtaining a permit and proceed with obtaining a license after its completion of corporate or business registration by law."

This indicates that Category II Telecom Enterprises are opened to the civilian sector for competition.

Regarding foreign participation, the same Article continues to describe that:

"A Foreign Party wishing to operate Category II Telecom Enterprises shall meet the following requirements and hold a special license granted by the MOTC:

a. The Foreign Party can introduce and transfer advanced hardware/software technology and know-how to the Nationals or Corporate Bodies of the Republic of China.

b. The Government of the Foreign Party's home country grants reciprocal treatment to the Nationals or Corporate Bodies of the Republic of China.

These provisions tell us that Category II Telecom Enterprises are competitive for foreigners on a technology-transfer and reciprocal basis.

B. Draft of Revised Statute of DGT Organization

From above A.1., we find that the DGT will be established to supervise and assist telecommunications enterprises and administer telecommunications regulations.

According to Article 2 of the revised Statute of DGT Organization, the post-reformed DGT will have the following key functions:

1. Proposing Telecom Policies

2. Approving Telecom Tariffs

3. Supervising and Assisting Telecom Enterprises

4. Administering Telecom Regulations

5. Setting Up Telecom Technical Criteria and Standards.

C. Draft of the Statute of CTC

According to Article 2 of the drafted Statute of Chunghwa Telecommunications Corporation (CTC), the CTC will be established for following purposes:

1. Operate domestic and international Telecom Enterprises.

2. Invest in or operated associated enterprises authorized by the MOTC.

In other words, the CTC will not be responsible for administrative supervision.

V. CONCLUSION

Liberalization and corporatization are a world trend which we could not go against them. Hence, we hope:

1. For liberalization, We must go along with the ongoing trend and seize the best moment to take advantage of it.

2. For corporatization, we have to learn advanced experiences and create our development potentials.

In our consideration and practice, carrying out our above reform and policy require the formalities of necessary legislation. The course do take time. So far our above three legislations are in the hands of the approving authorities, the Executive Yuan and the Legislative Yuan. There remain uncertainties as to when the Law and Statutes will be passed and how they will turn out. These uncertain factors are beyond our control.

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Taiwan's Changing Telecom Landscape

Preview of Infrastructure

Duei Tsai
Directorate General of Telecommunications, ROC

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

Taiwan's Changing Telecommunication Landscape

Preview of Infrastructure

Dr. Duei Tsai
Director
Corporate Planning Dept.
Directorate General of Telecommunications
Ministry of Transportation and Communications
June, 11 1993

Abstract

Telecommunication is vital in having the inimitable quality of being able to transmit information through space at the speed greater than other media known to human being so far. The telecommunication in Taiwan has experienced great achievements over the past four decades. Accordingly, the ROC has emerged on the list of the fastest growing countries in the world in terms of telecommunications development.

This paper describes the profiles of the status of DGT's business operations, network constructions, and major development plans. It also highlights the efforts that DGT has been making to fulfill the goal of transforming Taiwan into the telecommunication hub in Asia-Pacific region.

1. Introduction

The telecommunication network in Taiwan, ROC consists of the local telephone, the long-distance telecommunications, the international telecommunications, the data communication systems and so forth. These systems have been developed to quite a scale in terms of quality and quantity. The Directorate General of Telecommunications, known as DGT in short, with over US$ 12 billion in assets and 7.5 million telephone subscribers, has been playing a strategic and vital role in contributing to the dramatic economic growth of the ROC. It is foreseeable that the telecommunication industry will become even more important in the future for economic development and social progress. Accordingly, DGT will continuously do its utmost to fulfill the goal of making Taiwan as the telecommunication hub in Asia-Pacific region

2. Current Status of DGT

DGT is a state-run telecommunication company in the ROC. Its main mission is to promote the smooth interflow of information by means of upgrading and expanding the telecom networks. As of Mar. 31, 1993, several milestones were reached and the results could be seen from the following statistics:

(1) The number of telephone subscribers is over 7.53 million, accounting for a 7.8% annual growth rate.

(2) There are 36.14 telephone mainlines for every 100 people in the ROC.

(3) The pay-station density is 5.43 stations for every 1,000 people in the ROC, ranking the 8th in the world.

(4) The number of radio pagers is well over 1.2 million, accounting for an 18.8% growth rate over the past year.

(5) The number of mobile phone subscribers is over 0.3 million, amounting to a 117.5% growth rate over the past year.

(6) The local telephone switch has 10.86 million lines, of which 67.2% are digital.

(7) The toll switch has 0.66 million lines, of which 98.6% are digital. It is expected that all toll switching lines will be fully digitized by the year of 1994.

(8) More than 200 countries or areas can be reached via the International Subscriber Dialing (ISD) service, and the international outgoing minutes reached 329 millions in fiscal year of 1992.

(9) The total revenue for fiscal year 1992 amounted to US$ 4 billion, accounting for a 15% growth rate over the past year.

3. The Telecommunication Development Plans in The ROC

Due to the rapid development of micro-electronic technology, and the combined application of computers and telecom technologies, the telecom switching equipment is being digitalized, the transmission facilities are replaced with optical fiber, and the network structure as well as the terminal equipment is becoming more intelligent. As a result, the Integrated Services Digital Network (ISDN) has become the common objective of telecommunication worldwide.

Over the past four decades, DGT has implemented a number of expansion plans to keep abreast of the progress and requirements of our national development. Moreover, DGT launched the "Six-year National Development Plan - Telecom Modernization Projects" in 1991 and will complete it in 1996. The plan consists of ten major projects with a total of investment amounted to US$ 4.3 billion. These projects are stated as follows:

(1). Digital Local Switching System
(2). Digital Toll Switching System
(3). Optical Fiber Subscriber Loop
* (4). Chung-Shan Freeway Optical Fiber System
(5). Integrated Special Services Network
* (6). Taiwan-Matsu Submarine Fiber Optic Cable System
(7). Joint Participation in The Construction of The Asia-Pacific Submarine Cable System
(8). Personal Communication System (PCN)
(9). Intelligent Network (IN)
(10). Integrated Services Digital Network (ISDN)

Note: * - already completed in 1992

Besides, DGT also plans to make consecutive investment in the local telephone, the long-distance telecommunications, the international telecommunications, the data communication, etc., during the period of 1991 to 1996 so as to upgrade the service quality and thus meet the growing demands for the diversified services. It is estimated that the overall telecom investment in the ROC will reach US$17.4 billion from 1991 to 1996.

In short, the major telecommunication development plans in the ROC can be viewed as below:

3.1 The Digital Switches Development Plan

DGT plans to undergo an installation of 5.96 million lines of local digital switches between 1993 and 1996, among them, 3.42 million lines will be used for the replacement of the obsolete switching equipment. It is expected that by the year of 1996, the local switching equipment will reach a 93.78% rate of digitalization.

As for the toll switching equipment, DGT plans to install 0.2 million digital lines in fiscal years of 1993 and 1994. The overall digitalization will be achieved by 1994. Then, our customers will be able to enjoy faster, more accurate and more reliable services in toll communication.

3.2 The Fiber Optic Development Plan

As the fiber optic has merits of large capacity, high quality, and affordability, it has become popular in use today. Currently 76% of the international submarine circuits in the ROC are optical, while the opticalization rates of toll circuits(wireless cables excluded) and interoffice trunks are 85% and 61% respectively. If DGT continues to meet its telecom development objectives, all toll cables will be fully opticalized by 1997, with international submarine circuits, interoffice trunks, and subscriber loop opticalized by 1999, 2000, and 2020 separately.

3.3 The Mobile Communication Development Plan

By the end of this year, the existing analog Advanced Mobile Phone System (AMPS) will be fully loaded. Therefore, DGT intends to introduce the American Digital Cellular (ADC) system in 1994 to gradually replace the existing analog AMPS. ADC is a dual mode system to give subscribers a smooth change from analog to digital. Meanwhile, DGT is considering about introducing the Global System for Mobile Communications (GSM) in 1996 if the required 900 MHz frequency band can be obtained in time. DGT also notices the trend of personal communication network and services and plans to introduce the CT2/CT3 and the PCN in 1995 and 1997 respectively.

3.4 The Intelligent Network Development Plan

The Intelligent Network, in brief, is the adding of intelligence in the telecom network so that DGT may promptly offer, control, and manage these new services: the Advanced Free Phone, the Mass Calling, and the Credit Calling. Those services make up the first phase and will be completed in June, October, and December of next year. The second phase is going to provide the Virtual Private Network service which is scheduled to be introduced in Dec., 1995. The budget amounts of the first phase will accumulate to roughly US$ 48 million, while the second phase budget is still under planning.

3.5 Projected Benefits

After fulfilling the development plans aforementioned, DGT expects to enjoy the benefits as follows:

(1). to increase the digitalization rate of local switches from 42% (1991) to 93% (1996)
(2). to provide better mobile communications services
(3). to upgrade the telecom services on the offshore areas such as Kinmen and Matsu islands
(4). to offer high-quality and diversified telecom services
(5). to equalize telecom development in both urban and rural areas in the ROC.

4. Conclusion

With fickle evolution of telecom technology and know-how, the horizon of telecom services is gradually enlarged, thereby making room for the continued development of telecom business. As such, DGT will continuously not only keep close eyes on the ongoing trend of state-of-the-art technology and know-how, but also devote itself to the overall expansion of digital and optical fiber transmission systems, digital telephone switching systems, intelligent network, satellite communication, mobile and personal communications, and eventually will achieve the goal of providing the ISDN service throughout the whole island of Taiwan by the year of 2000.

Thank you for attention.

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Panel Discussion: Overview of the Proposed Change

C.J. Lee
Northern Taiwan Telecommunications Administration, DGT, ROC

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

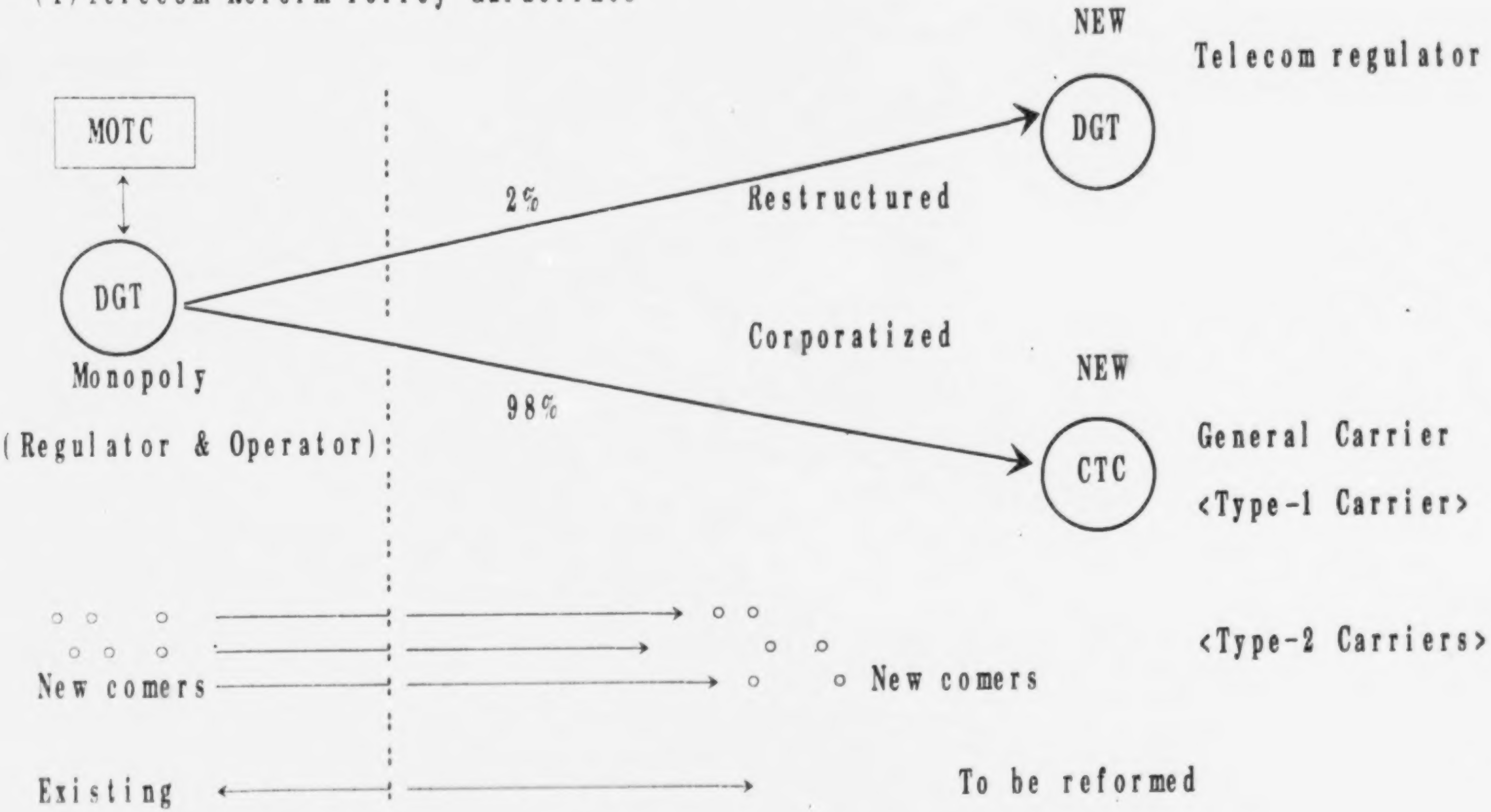
Taiwan's Changing Telecom Landscape

"Overview of Proposed Change"

"OPERATIONS"

1. Organization

(1) Telecom Reform Policy Guidelines



MOTC

DGT

Monopoly

(Regulator & Operator)

2%

Restructured

NEW

DGT

Telecom regulator

Corporatized

98%

NEW

CTC

General Carrier

<Type-1 Carrier>

<Type-2 Carriers>

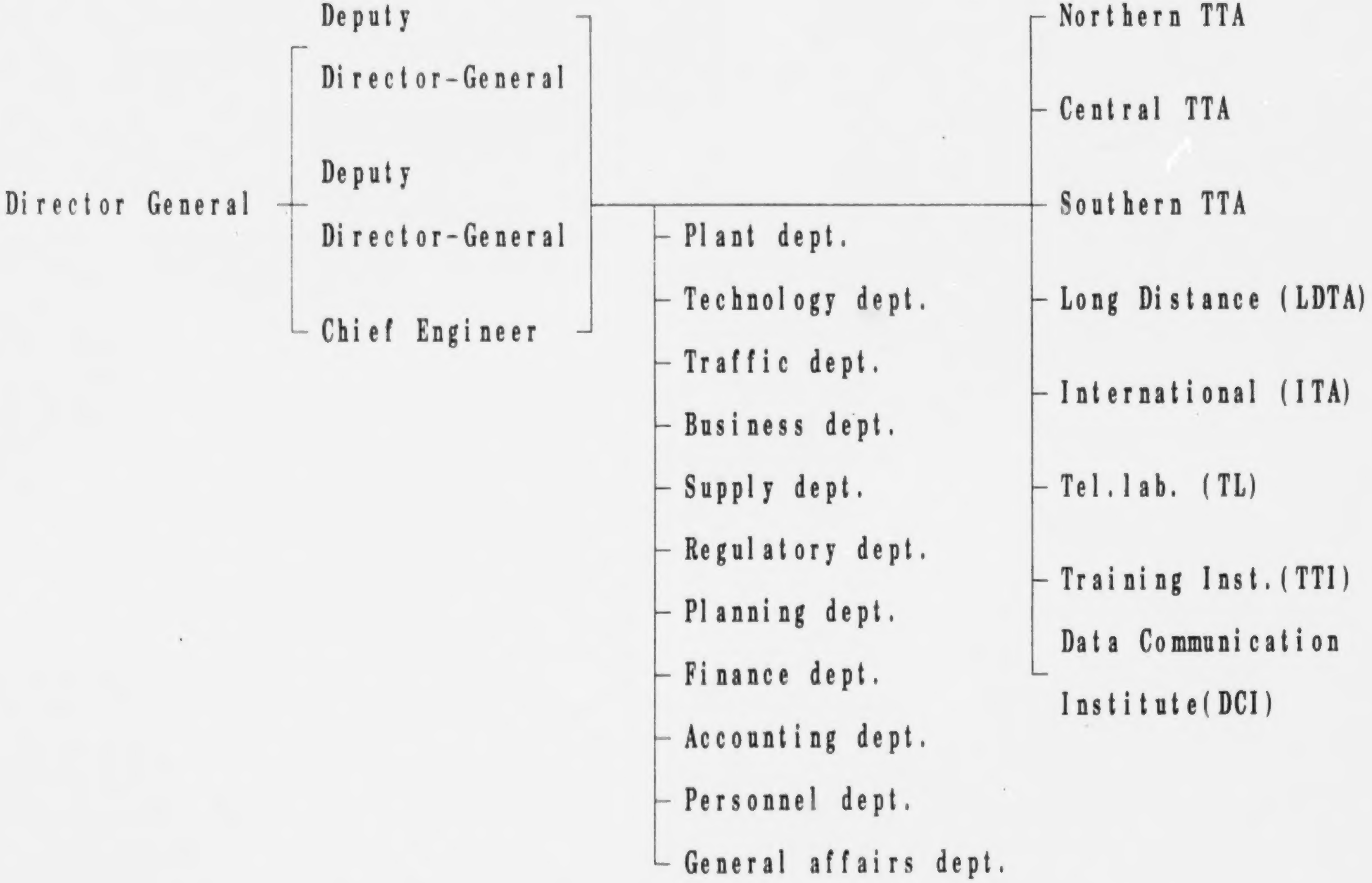
New comers

New comers

Existing

To be reformed

(2)Organization Chart of DGT (Existing)


Director General
Deputy Director-General
Deputy Director-General
Chief Engineer
Plant dept.
Technology dept.
Traffic dept.
Business dept.
Supply dept.
Regulatory dept.
Planning dept.
Finance dept.
Accounting dept.
Personnel dept.
General affairs dept.
Northern TTA
Central TTA
Southern TTA
Long Distance (LDTA)
International (ITA)
Tel.lab. (TL)
Training Inst.(TTI)
Data Communication Institute(DCI)

(3) Organization Chart of CTC (Proposed)

Chunghwa Telecom. Corp. (CTC)

- Northern Regional Telecom. Operation Corp.
- Central Regional Telecom. Operation Corp.
- Southern Regional Telecom. Operation Corp.
  - District Business Offices(about 40)-Service Centers(about 156)
  - Construction Depts. (1~4 each)
- Long Distance Telecom. Corp.
  - District Business Offices (3)
  - Construction Depts. (1~3)
- International Telecom. Corp.- Overseas Business Offices
- Data Communication Corp.
- Telecom. Laboratories
- Telecom. Training Institute-Taichung, Kaohsiung Branch Institute

* Spin-off: New subordinates will be expected to set up for better efficiency and competition in certain years after reformation.

2. Operation Scope of CTC Subordinates

(1) 3 Regional Telecom. Corp.: Local Telephone network construction, operation and basic services provision.

(2) Long Distance Telecom. Corp.: Toll telephone network, mobile, pager and satellite communication systems construction, operation and relevant services provision.

(3) International Telecom. Corp.: International communication network construction and operation. Overseas consultancy and engineering.

(4) Data Communication Corp.: Data communication network construction, operation and value-added services provision.

(5) Telecom. Lab.: R&D support to CTC & subsidiaries and private sectors as req'd.

(6) Telecom. Training Institute: Training CTC employees and private sectors as req'd.

3. CTC Operating Goals

(1) Provide universal, diversified and intelligent telecommunication services.

(2) Accerlerate the formation of information society.

(3) Promote the development of national strategic industries in optical-electronic, communication and information.

(4) Construct an excellent telecommunication infrastructure.

4. CTC Operating Strategies

(1) Construction of ISDN, IN network.

(2) Improvement of outside plant quality.

(3) Expand mobile telephone system.

(4) Provide IC card phone service.

(5) Construction of high quality international communication facilities.

(6) Support the development of telecommunication industries.

(7) Establish Taiwan as the Asia-Pacific Telecom. Hub.

(8) Enforce technology research and development, to accelerate the establishment of Taiwan as the technology center in the west Pacific Area.

(9) Enhance marketing of diversified services.

(10) Internationlization

In the past decades, Taiwan telecom. has aquired sufficient experiences and capability in planning, engineering, operation, management and research. It is highly expected to actively involve in overseas consultancy service and cooperation.

5. Service Quality And Competition

In line with world trend of corporatization, liberalization and internationalization, CTC has to upgrade its technological, operational and managerial efficiencies and capabilities to ensure continuous growth and development in the national or world-wide competition environment.

THE 1993 PTC MID-YEAR SEMINAR

June 9-11, 1993
Taipei, Republic of China

World Trends in Corporatization and Privatization

Panel Discussion: Overview of the Proposed Change

L.B. Lan
Directorate General of Telecommunications, ROC

organized by
Pacific Telecommunications
Council

sponsored by
Directorate General of
Telecommunications, MOTC

Panel Discussion : Overview Of The Proposed Change

Business & Marketing In DGT

June 11, 1993

Contents:

1. Telecom Operation Statistics
2. Liberalization of Telecom Services
3. New Services Development
4. Marketing Operatioms
5. Conclusion

1.Telecom Operation Statistics

(1) Growth of Business Operation

ITEM	FY1992	FY1993	Growth
1.No. of Telephone Subscribers	7,137,265	7,657,000	7.28%
2.No. of Radio pager Subscribers	1,078,487	1,253,000	16.18%
3.No. of Mobile phone Subscribers	299,690	470,000	56.83%
4.Domestic Toll Calls (Via Operator, in 1,000 calls)	14,804	10,519	-28.94%
5.International Calls (Outgoing, in 1,000 Min.)	329,325	395,000	19.94%
6.International Telex (Outgoing, in 1,000 Min.)	4,898	3,848	-21.44%
7.Data Subscribers (Packet SW.)	3,492	3,898	11.63%
8.Data Subscribers (Leased Line)	34,449	38,900	12.92%
9.Videotex Subscribers	12,334	13,340	8.16%
10.UDAS Traffic (in 1,000 Min.)	1,340	1,343	0.22%

(2) Density of Services (As of April 30,1993)

1. Local Telephone	36.32 main lines/100 population
2. Pay Station	5.44 stations/1,000 population
3. Mobile Telephone	21.18 subscribers/1,000 population
4. Radio Pager	58.89 subscribers/1,000 population

(3) Revenue Model for 1993 FY (EST.)

ITEM	Revenue amount (NT$ Millions)	Percentage (%)
Telegraph	560	0.48
Telephone	112,736	97.18
Domestic	60,149	51.85
International	28,767	24.80
Facilicitis Leased	10,247	8.83
Mobile	13,573	11.70
Data	2,305	1.99
Others	407	0.35
Total	116,008	100.00

2.Liberalization of Telecom Services

(1) Services Items & Time Table for Liberalization

Service Item Opened	Time Table
1. Subscriber Telephone Sets	Aug. 1, 1987
2. Data Modem (< =2,400 bps)	Nov. 1, 1987
3. Intelligent Telex Terminal	May. 10, 1988
4. Telex Terminal	May. 10, 1988
5. Modem Not Connected To Basic Network	
< =9,600 bps	Jun. 1, 1988
> 9,600 bps	Jun. 1, 1989
6. Lift Restrictions on Leased Circuits for Shared-use	Jul. 1, 1989
7. VAN Services	Jul. 1, 1989
8. Subscriber Line Pre-wiring	Jul. 1, 1990

(2) Present Status of VAN Services in Taiwan

Operating Items	Applicants	Licenced	Operator
Information Storage & Retrival	52	41	21
Information Processing	25	19	10
Remote Transaction	18	12	7
Word Processing & Editing	17	11	8
Voice Mail	14	9	5
Electronic Mail	25	17	7
BBS	3	1	0
EDI	2	1	0

(3) Number of VAN Service Providers in Different Operating Area

Operating Areas		Applicants	Licenced	Operator
Domes.	Islandwide	54	42	22
	Local	1	1	0
Hong Kong		11	6	3
U.S.A.		10	5	3
Japan		5	4	2
Australia		3	1	0
United Kingdom		3	1	0
Singapore		2	0	0
Middle East		1	1	0
South Africa		1	1	0

3.New Services Development

As you might have known, DGT has been undertaking a new 6-year telecom construction plan in the period of 1992-1997. The estimated total investment will amount 5.1 billion US dollars. Resulted from the plan, three major hi-tech telecom new services will be launched one after another in the coming year :

(1) DOMSAT : DOMestic Satellite Communications

(2) ISDN : Integrated Services Digital Network

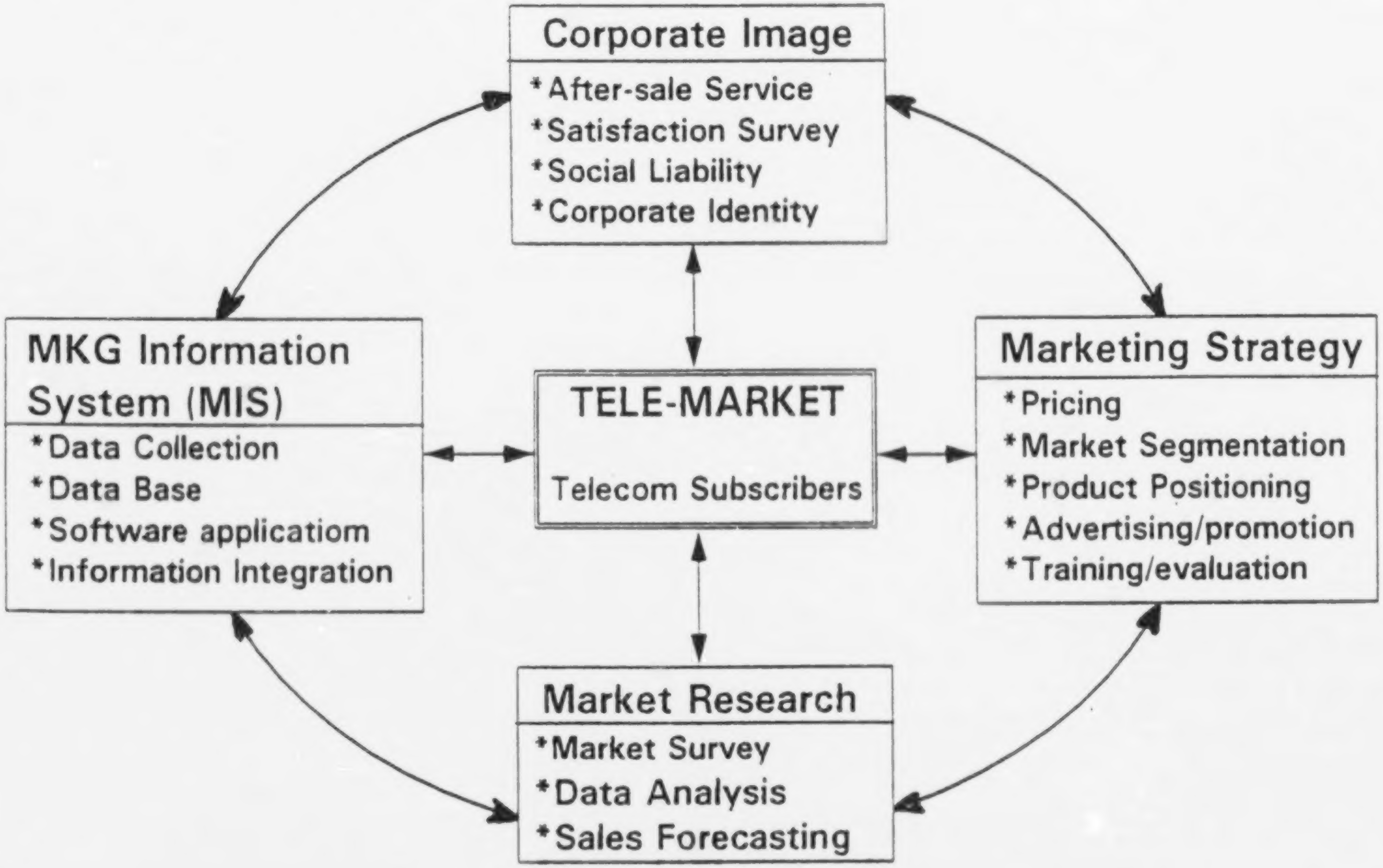
(3) IN : Intelligent Network

The launching time, stage, and offerings are as follows:

Items	DOMSAT	ISDN	IN
Launching Time	1993. 7. 1.	1994. 4. 1.	1994. 7. 1.
Open Stage	Commercial	Pilot Commercial	1st of 3 phases
Services Offered	(1) Transponder Capacity Leased Service (2) Satellite Network Leased Service (3) SCPC (4) VSAT	(1) Bearer : 3 (2) Teleservices :11 (3) Supplementary :14 (4) CPE : 4 Digital phone Video phone PC Add-on Card G4 Fax	(1) AFP : Advanced Free Phone (2) MCS : Mass Calling Service (3) CTS : Credit Telephone Service

4. Marketing Operations

(1) Marketing Operating System:



Corporate Image

- *After-sale Service
- *Satisfaction Survey
- *Social Liability
- *Corporate Identity

MKG Information System (MIS)

- *Data Collection
- *Data Base
- *Software applicatiom
- *Information Integration

TELE-MARKET

Telecom Subscribers

Marketing Strategy

- *Pricing
- *Market Segmentation
- *Product Positioning
- *Advertising/promotion
- *Training/evaluation

Market Research

- *Market Survey
- *Data Analysis
- *Sales Forecasting

(2) Marketing Strategies

1. Popularity of Quantity --- Increase telephone installation and telephone utilization rate.
2. Upgrade of Quality --- Enhance the development and promotion of new services.
3. "Business subscribers" as the target market.
4. "Rate rationalization "to offer the public reasonable communication.
5. "Corporate Identity System (CIS)" to build the corporate image.
6. "Account Management" to improve customer services.
7. Promotion campaign & media advertising to expand the market share

5. Conclusion

From the geographical location and telecom development status, Taiwan is determined to become a telecom transit center of West Pacific Region. DGT's increasing investments in advanced telecom infrastructure will strengthen Taiwan's global communications capabilities and keeping pace with technology will require forward-looking planning, expertise and sound investment. We can envision that the liberalization and corporatization of telecom in Taiwan will result in opening Taiwan's telecom market to competition. Taiwan's success as an economic entity will base on the capabilities of our telecom infrastructure, and our ability respond to the needs of various users.

THURSDAY, JUNE 10 - REGIONAL PERSPECTIVES

0930-1200 Global Trends - Restructuring, Privatization, Finance, Investment

Moderator: N. Mark Lopianowski, Director, Teleconsult Ltd., Canada

Speaker: Michael Chow
Vice President, Asia Region, BellSouth International (Asia/Pacific), Inc., Hong Kong
"Worldwide Trends Towards Liberalizing the Wireless Segment of Telecommunications"

Speaker: Christopher M. Harland, Executive Director, Group Head Telecoms, Morgan Stanley, USA
"Joint Ventures and Strategic Alliances"

Coffee Break, hosted by Hewlett Packard Taiwan Ltd.

Speaker: Kan-Wei Wu, Vice President, Corporate Support, Seimens Telecommunications Limited, Taiwan
"Expanding Responsibility of the Private Sector"

Speaker: Anthony N. Briscoe, Director, International, Telecom New Zealand International Ltd., New Zealand
"Going All the Way - What its Like to be Un-Regulated"

1200-1400 Lunch, hosted by Siemens Telecommunication Systems Ltd.

1400-1630 Case Studies

Moderator: Robert Walp, Vice Chairman, General Communication, Inc., USA

Speaker: Gerald Moriarty, Managing Director, Broadcast Communication Limited, New Zealand
"Regulatory Environment for Telecommunications and Broadcasting in Australia and New Zealand"

Speaker: Nam-Jin Cho, Managing Director, Overseas Cooperation Department, Korea Telecom, Republic of Korea
"The Effects of Government Policies on Telecom Industry Developments"

Speaker: Gerald Wakefield, Partner, Middletons Moore & Bevins, Australia
"Vietnam Moves to Modernize with a New Regulatory Regime"

Coffee Break, hosted by Raychem Taiwan Ltd.

Speaker: Diana Sharpe, Telecommunications Consultant, Sly and Weigall, Australia
"Regulatory Development and Industry Changes in Singapore"

Speaker: John Ure, Research Associate, Center of Asian Studies, Hong Kong University, Hong Kong
"An ASEAN Survey of Privatization and Corporatization"

1645-1800 Special Task Group Meetings (Open to all attendees)

a) Asia-Pacific ISDN/DATACOMM Users Group
Dale T. Rogers, Marketing Manager, International Business, AT&T Network Systems, USA

b) Travel/Tourism
George Darby, Attorney-At-Law, Law Offices of George E. Darby, USA

1830-2030 Buffet Dinner, hosted by Taiwan International Standard Electronics Ltd. (Alcatel TAISEL)

FRIDAY, JUNE 11 - FOCUS ON TAIWAN, REPUBLIC OF CHINA

0930-1200 Taiwan's Changing Telecom Landscape

Speaker: Duei Tsai, Director, Corporate Planning Department, Directorate General of Telecommunications, ROC
"Preview of Infrastructure"

Speaker: King-Teh Lee, Deputy Executive Secretary, Research and Planning Committee, Directorate General of Telecommunications, ROC
"Overview of Current Regulation/Policy"

Coffee Break, hosted by United Fiber Opitc Communication Inc.

Panel Discussion: Overview of the Proposed Change

Moderator: P. C. Chen, Deputy Director - General, Directorate General of Telecommunications, ROC

Panelist: P.N. Wu, Director, Technical Department, Directorate General of Telecommunications, ROC

Panelist: C.J. Lee, Deputy Managing Director, Northern Taiwan Telecommunications Administration (NTTA)

Panelist: L.B. Lan, Director, Business Department, Directorate General of Telecommunications, ROC

1200-1400 Lunch, hosted by AT&T Taiwan Telecommunications Co. Ltd.

1400-1730 Facility Tour
Telecommunication Training Institute
Siemens Telecommunication Systems
Taipei E4 Telecommunications Service Center, NTTA
(Select one, for Overseas Participants Only)

1830-2030 Farewell Dinner, hosted by Directorate General of Telecommunications, ROC